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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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CANADIAN IRON INDUSTRY.

No industry in Canada has shown more remarkable progress during the past year than that connected with the production of iron, and none in Canada has a more promising future, says the Toronto correspondent of Bradstreet's. So enthusiastic are some of the people interested in it that they declare the Canadian iron industry will, in the future, have a more important bearing on the industrial development of the Dominion and be of more value to the country than its gold mines, not including those in the rich gold fields of the Klondike. The product of the Canadian furnacemen is eagerly sought by Canadian manufacturers, and good prices are obtained for the iron in the home markets. There is still room for the industry to grow, because while the production of iron in Canada at present is only 100,000 tons annually, the consumption is at least 800,000 tons a year.

There are now four iron-smelting works in Canada, and three of them are in Ontario while the other is in Sydney, Nova Scotia. One is at Hamilton, which has been working successfully for years; another is at Deseronto, Ontario, and the third is at Midland, on Georgian Bay, Lake Huron, this latter having been formally opened in December. This latest addition is owned by the Canada Iron Furnace Co., the prime movers in the enterprise being George E. and T. J. Drummond and J. T. McCall, of Montreal. With the new enterprise at Midland, the supply of native iron may come much nearer to the requirements of the Canadian manufacturers. And as the demand increases, the Midland company intend to increase their capacity for smelting the Canadian ore, and it is expected that the the iron industry will so develop in time that not only the iron users of Canada will be able to secure all the iron they need in the home market, but that the Canadian smelting companies will export their product to foreign markets.

Vessels have been brought out from England to carry the ore of the Michipicoten iron mines on the Algoma Central railway to Midland, and next year eight ore carriers will be plying Lake Huron with raw material. The harbor at Midland is an excellent one, having a depth of twenty feet, and the company have made arrangements with the railways for the carriage of their product from the smelter east at favorable rates. The new furnace is described as thoroughly up to date, and has a capacity of 150 tons a day, which can be easily increased.

The mines at Michipicoten are favorable situated for the cheap transportation of the ore to the furnace. The mines can be operated at a comparatively low cost, as vast quantities of ore are lying on the surface, requiring only to be loaded on cars now running into the mine. The ore is of a high grade, and has been pronounced by experts to possess all the qualities required in general structural work, and in fact, for all sorts of light and heavy iron work. The first product of the Midland furnace last month was purchased by a large stove manufacturer, of Toronto, for use in his foundry.

The smelting works at Sydney, in Nova Scotia, have attracted much attention from capitalists in the United States as well as in Canada. The work there is being carried on on a very large scale. From a comparatively quiet town a few years ago, Sydney has in the past eighteen months developed into one of the most active industrial centers in the Dominion. Within the past few days the parties interested there have been arranging for the placing of $5,000,000 additional capital in their enterprises in order to enlarge their plant and extend the scope of their business. It is now proposed to turn out ships, plates and steel rails. The iniatory steps have already been taken to that end, and it is expected that before the end of 1902 the new industry will be in going order. It is hoped that in connection with this propcsed new industry shipbuilding in the east will show renewed vigor, and on an extensive scale never before deemed possible in Canada. The Sydney works are favorably situated for the export business, in the development of which the capitalists hope for great results in the way of extending their output.

BIG STEAMERS USE LESS COAL THAN SMALL ONES.

The tendency is to increase the size and speed of al steamers nowadays, and the rule holds good in regard to self-trimmers, says a writer in the Engineering Magazine. Many of them will carry 7,000 tons of coal as cargo at eleven knots, and there is sufficient evidence to support the view that the larger the vessel the more economical, in proportion, is the coal consumption. A return now before me, in which are given the results of a large number of voyages by different ships, shows that a 9,000-ton steamer, running 267 miles a day, had a consumption of .036 pounds of coal per ton displacement per mile. An 8,000-ton steamer, running 266 miles a day, used .038 pound, while a 7,000-ton vessel, steaming 264 miles a day, burned .648 pound. A 6,000-ton steamer, going 257 miles a day, used .054 pound of coal per ton displacement, and a 5,000-ton steamer, travell ing 280 miles a day, .067 pound; while a 4,000 ton steamer, going 269 miles a day, consumed .081 pound.

These figures show in each case speeds of close about eleven knots, and they also show that the cost for the 9,000-ton steamer for coal was less than half that of the 4,000-ton boat, per mile per ton displacement, showing that the larger the steamer the less the coal consumption pro rata.

MARINE ENGINEERS.

Marine Engineers' Beneficial Association, No. 92, Saginaw Mich., elected officers Sunday afternoon Dec. 30 at their hall, Genesee avenue, as follows:

Past Pres., Peter McLaren; Pres., Amandus G. Mol; Vice-Pres., E. Richard Nantell; Rec. Sec., Jos. D. Budd; Cor. Sec., Miles W. Gaffney; Treas., John Henry; Fin. Sec., Walter A. Henry; Delegate National Convention, Jos. R. Hall; Alt., Miles W. Gaffney; Trustee, three years John Henry; Chap., Jos. R. Hall; Con., Alex. Frazier; Doorkeeper, Frederick Pflueger.

This institution was organized in February, 1892, and has been one of the most prosperous lodges in the state, having a membership of 40 since its beginning, only two members having died, James Carter and William Herbert.

LIQUID FUEL IN STEAMERS.

The following is from the London Times:

The steamship Cowrie of the Shell Transport and Trading Co., managed by Sir Marcus Samuel & Co., which is now discharging a cargo of oil in the Thames, has steamed all the way from Koetei, in Borneo, to London—9,250 miles—using nothing but liquid fuel; and the boilers for supplying the steam for the pumps now discharging the cargo are fired by the same material. The oil is not burned by a thin layer of incandescent coal, as is the case in some systems, but is pulverized or reduced to spray by means of a steam jet at the furnace door, where it is delivered from furnace tanks above the boilers. The Cowrie was formerly fired with coal, and her conversion to liquid fuel has been attended with advantageous results. Her complement of stokers has been reduced to six, as against sixteen necessary with coal, and her speed has at the same time been slightly improved. Moreover, the change has effected an important saving in bunker space, for her consumption of oil on this voyage was only 22 tons a day, whereas her daily consumption of coal used to be 35 tons, and a ton of oil is calculated to occupy only 34 cubic feet, against 45 feet required for coal. Oil, too, can be carried in the water-ballast tanks, and can also be taken on board much more quickly than coal—on a recent occasion 300 tons were pumped into a German steamer in one hour.

The oil yielded by the Borneo fields forms an excellent fuel when used just as it comes from the ground, and is said to be superseding both the Russian and the American products in the Far East, where it is extensively used for fuel in steamers—e. g., the Hamburg-American boats engaged in the eastern trade. To give some idea of its cost, it may be mentioned that, according to the terms of a recent contract, which need not be specified exactly, it is to be delivered at the price of 30s. a ton at Singapore and Hong Kong, 32s. 6d. ($7.90) at Shanghai, 35s. ($8.51) in Japan and Colombo, and 50s. ($12.16) at Suez. The Cowrie brought from Borneo over 6,000 tons of solar oil, the greater part of which is destined to be used by the Gas Light and Coke Co. for the production of oil gas for enrichment purposes, and it is an interesting fact that the vessel (or one like her) will be bunkered with the refuse that remains after the oil has been utilized in this manner.

I wonder whether it is possible the Standard Oil Co. does not use liquid fuel in its oil-tank steamers.

MARSHAL HALSTEAD, Consul.

Birmingham.

SHIPBUILDING IN GERMANY.

Consul Winter reports from Annaberg as follows:

During the past ten years shipbuilding in Germany has become a great industry. Old wharves have been torn away and new and larger ones constructed in their place. The present capacity of all the wharves does not meet the demands of the German merchant marine. Many orders must still be placed in foreign countries. At present twenty-two ships are being built in England for Hamburg alone. During the first half of the present year, the dock owners and shipbuilders of Stetten, Kiel, Flensburg and Bremen have increased their capital stock, on the whole, by $1,378,000. Many new enterprises are being planned. In the neighborhood of Nordenham, on the Lower Wesel, large wharves are being projected. A wharf for Stralsund is being planned which will cost nearly $1,000,000. It is also reported that a German-Belgian syndicate will build a wharf in Antwerp under the auspices of the Bremen Vulcan Works. The German merchant marine now numbers 1,209 steamers, of 2,159,919 tons.

BUFFALO.

Special Correspondence to the Marine Record.

Lines in the Central Passenger Association are rather apphensive of the passenger steamer lines on Lake Erie entertering into some sort of combination with rail connections that do not reach Buffalo for the purpose of scooping the all rail lines on Pan-American excursion business next summer. The steamship companies, it is known, are preparing to put on an increased number of boats. At the meeting of the Central Passenger Association at New York to-day the subject is to be taken up, with a view of inducting the water lines to agree to a schedule of rates that will prevent friction.

The commerce of the Great Lakes for the closing year of the century seems likely to show a larger tonnage movement than it any preceding year. The figures just completed by the Treasury Bureau of Statistics and which over the entire navigation season up to December 1st are especially interesting as demonstrating the relative importance of the principal ports as handlers of the water-borne commerce of the inland seas. In the neighborhood of two-thirds of the hard coal moved was sent from Buffalo, the shipments from that port aggregating 1,208,727 tons. Erie, Pa., the only other shipping port of any prominence, has had during the season a movement of 488,758 tons. Buffalo so nearly monopolizes the unloading of grain that it is scarcely worth while to consider the arrivals at other ports. The receipts at the elevator center at the eastern end of Lake Erie aggregated to December 1st a total of 43,814,019 bushels of wheat, 57,175,069 bushels of corn, 26,133,424 bushels of oats, and 9,412,457 bushels of barley. Of the leaders in the movement of unclassed freight, Buffalo shipped 657,645 tons, and Chicago 402,889 tons. Chicago had receipts of 793,909 tons and Buffalo 652,872 tons.

The present channels below mean water levels in Lake Erie vary from 19 to 20 feet. But for several years the water has been fully one and a half feet lower much of the time, leaving a mean depth, if not to exceed 18½ feet being the draught of the large vessels. When easterly winds prevail the water is still lower and it often happens that boats are grounded at great danger to themselves and usually blocking navigation until they are lightered. The immense boats now in use are often obliged to go close to the deck line where the bottom is theoretically two feet less deep and this frequently results in trouble. At the same time the engineer was ordered to prepare plans and estimates, the Corporation Connsel was instructed to report to the Common Council the rights it has to compel the construction of docks along city waterways, which shall prevent the banks washing in and obstructing the channel. The plan is to deepen the river and canal, and the connecting slips to a depth of 22 feet in mud and 23 feet in rock bottom. The whole matter is to be urged and accomplished as quickly as possible. A difficulty has arisen between the engineering and fire departments over the ice. The Fire Commissioners are anxious to keep all channels open and free from ice so that the fire boats can be used in case of trouble on the water front, and the engineer wants the ice intact for his men to make soundings. A communication on the subject is to go to the Common Council this week.

The annual report of Col. John N. Partridge, Superintendent of Public Works, will show a total of 3,345,941 tons carried on all the canals during the season of 1900, as compared with 3,686,051 tons carried on all the canals during the season of 1899, a total decrease of 340,110 tons. The fact that of the decrease 307,058 tons were in through freight East, the remaining decrease being less than 24,000 tons, leads the Superintendent of Public Works to believe that the decrease in canal traffic is largely chargeable to two causes. One of these and the principal one is that during the fore part of the navigable season, during which time the weekly and monthly statements made by collectors show a falling off sufficient to account for a large share of the decrease, a rate war was on between shippers and boatmen. As a result of this controversy over rates, boatmen tied their boats to the dock in Buffalo and remained idle for a long time, refusing to load until better terms were offered. The other main cause for the decrease in through east shipments was the late opening of lake traffic. The first craft through from Duluth in the spring had to make its way into the harbor at Buffalo through several miles of ice floe. As a result of this experience, other craft were prevented from attempting to make the harbor for some days. The total value of shipments on the canal during the past season was $84,123,772. The principal articles of the decrease were boards and scantlings, 119,975 tons; wheat, 144,120 tons; oats, 57,298 tons; stone, lime and clay, 57,091 tons; iron ore, 101,720 tons. There was an increase in the following articles over 1899: Rye, 4,507 tons; corn, 96,348 tons; apples, 4,343 tons; potatoes, 9,230 tons; ice, 34,633 tons; phosphate, 13,802 tons, and bituminous coal, 50,116 tons.

DULUTH—SUPERIOR.

Special Correspondence to The Marine Record.

West Superior is at the head of the list of receiving ports for soft coal with a record of 1,270,163 tons. Milwaukee comes second with 726,044 tons, and Duluth is a close third.

Almost every port on the upper lakes has this year made fairly heavy shipments of lumber, Duluth alone sending out 359,264 thousand feet. Almost half of the total lumber movement was directed to either Chicago or Cleveland. The former city received 538,246 thousand feet, and the latter port 430,320 thousand feet.

The Cramp-Ontario Steel Co., Collingwood, Ont., with a capital stock of $5,000,000, will erect four 300-ton blast furnaces, four 30-ton open-hearth steel furnaces, blooming, structural, rail and bar mills, and a medium sized plate mill. The town has fine facilities for shipping by land and water, and a bonus of $115,000 has been granted, a free site on the harbor and terminals, with eighteen feet of water.

Capt. Frank Henrich, of the Duluth hydrographic office, has received one of the proposed new style of compass which has been brought to the attention of sailors by Rear Admiral R. B. Bradford. He is chief of the Bureau of Equipment and the proposed new compass card is a production by Lieut. Com. Diehl, superintendent of compasses. The compass cards have been sent out to well known mariners for criticism.

It is reported that the Oliver Iron Mining Co. has under consideration the building of a railroad from its mines at Ironwood and Bessemer to a point on Lake Superior, distant from Ironwood only 14 miles. It is said that the company has purchased a large water frontage for docks and has secured the right of way for the tracks. If a new port were established, it would divert about 2,000,000 tons of ore annually from Ashland.

The tax commissioners of Wisconsin in their annual report recommend amending the laws regarding vessel taxation so as to make them at least as favorable for vessel builders and owners as the laws of Minnesota. Under present laws vessel ownership is driven away from Wisconsin to other states, which thereby derive the taxes and credit that properly belongs to this state. This is a matter of exceeding importance to Superior, a shipping and shipbuilding port second to none in the country, and should receive most earnest attention at the hands of our people and legislators.

The works of the Collingwood Ship Building Co., at Collingwood, Ont., when finished will be one of the best equipped on the Great Lakes. The drydock in connection with the shipyard is being lengthened and everything prepared for a spirited compaign this winter. The keel of a large 350 foot steel passenger steamer for the Beatty Line is being laid, and it is said the keel of three other steel vessels will be laid early in the year. The yard now contains a vast amount of machinery of the most modern type for carrying on this work and will employ a great many workingmen during the winter.

The situation at Duluth is not so bright. Large quantities of Duluth grain are now in the elevators at Buffalo which have not been sold. Until this is sold very little will be done toward spring shipment. In the meanwhile the amount of grain at the head of the lakes is vastly in excess of what it was at this time last year. According to the same authority there are eight and a half millions of bushels of all kinds of grain now in the Duluth elevators, which is a half million bushels in excess of what was stored there a year ago. If the demands in the foreign market are large enough to warrant the movement to the east this means bright prospects for first charters in the spring, but, of course, all depends upon the state of the European crops and the conditions in the East. The uncertainty as to these conditions will retard the progress of rate-making. In the meanwhile, there being no great demand for grain at the elevators, it is not being shipped, and boats for storage purposes are not in demand.

The steel screw steamer Donnacona, which ran her trial trip off the Tyne on November 1, was built by Messrs. Wood, Skinner & Co., of Bill Quay-on-Tyne, for the Hamilton and Ft. William Navigation Co., and is intended primarily for traffic on the lakes, specially designed for that trade. She is classed in the British Registry of Shipping, and is 255 feet long by 42 feet 6 inches beam, with a molded depth of 23 feet 8 inches. She is designed to carry 2,650 tons on a draft of 16 feet 5 inches, and will be able to navigate the Welland canal, which joins the lakes with the St. Lawrence river. She has triple expansion engines of about 1,000 horsepower, and on her loaded trial attained a speed of nearly ten knots. She is the second of two vessel built to the order of this company in Great Britain, and the first of her type turned out on the Tyne, being fitted either for the sea or lake trade. She is specially designed for carrying coal, grain, and ore between Lake Superior and Hamilton and Montreal, and, loaded to a draught of 14 ft., will be able to navigate the canal system of Canada, which by reason of recent improvements, now affords sufficient depth of water to permit of direct navigation for vessels of that size between the lakes and the open sea. During the winter, pending the opening of navigation with the St. Lawrence, the vessel will be employed in the European trade.

The fire in the coal at the C. Reiss Coal Co.'s docks, Sheboygan, burned for several days, though a dozen streams of water had been continuously thrown upon the debris. The loss will foot up over $200,000, while the insurance will be far less than that amount. There were 45,000 tons of coal on the dock.

CHICAGO.

Special Correspondence to The Marine Record.

Dan. T. Helm is here from Duluth visiting his friends.

J. B. Bates & Co. are converting the steamer Madagascar into a double decker.

The steamer Pasadena will receive considerable repairs to her starboard quarter and cabin at Dunham shipyard.

The twenty-sixth annual reception and ball of the Marine Engineers' Association No. 4, of Chicago, will be given at the Medinah Temple, Fifth avenue and Jackson boulevard, Wednesday evening, January 30th, 1901.

At the Chicago Ship Building Co.'s shipyard the steamer George N. Orr went into dry dock last Saturday for repairs to bottom damages. The steamer Northman building for the Northwestern Steamship Co., will be launched in about two weeks.

The Lehigh Valley Line steamer E. P. Wilbur is in dock receiving a new hub and two new blades to her wheel, repairs to her shaft and some new rivets in plates. The fire boat Yosemite is in dock and has received new deck beams and deck re-calking and re-ironing.

The general lodge of the International Longshoremen's Association, has notified all captains, owners and vessel agents that the grain shovelers of Chicago will not in future handle lines or in any way assist the passage of a boat to or from any elevator. This action is taken in order to protect longshoremen, as well as to aid sailors, who, it is maintained, should do the longshoremen's work during the winter.

Johnson, Knudson & Co. are giving the steamer John Plankinton all new main deck beams, considerable new plank on sides, part new floor and re-calking. The steamer Selwyn Eddy is receiving all new floor and part new fender strakes, the steamer Panther is being raised 3 feet and receiving new deck beams and deck, considerable outside plank and recalking, the steamers Oscoda and Saint Paul are receiving general repairs.

The firm of J. G. Keith & Co., dissolved partnership January 4th by mutual consent. Capt. J. G. Keith and Capt. D. Sullivan will both continue in the vessel agency and marine insurance business. Capt. J. G. Keith will continue to occupy the offices in the Rialto Building. Capt. D. Sullivan, who has associated with himself his son, F. J. Sullivan, has opened offices in the Brother Jonathan Building, 2 and 4 Sherman street, Rooms 27, 28, 29.

The steamer George Stone, towing the steamer Pasadena, both light, arrived here from Milwaukee Sunday morning. The Great Lakes Towing Co.'s tug T. T. Morford went to Milwaukee and accompanied the two steamers to this port. Her services were not brought into use until they were within about six miles from Chicago, when the Stone's condensor became choked with ice, and the Morford took both steamers in tow and brought them on to port.

Captain Miles Barry, president of the Chicago & Muskegon Transportation Co., has purchased the steamer Alice Stafford from Wm. E. Fitzgerald, of Milwaukee. The Stafford will be put on the Chicago-Muskegon route the coming season. She is in winter quarters at Milwaukee and will have her cabin capacity increased. She has been running between Gladstone and Owen Sound in the freight and passenger business in connection with the Soo railroad.

The Marine Engineers' Beneficial Association No. 4, of Chicago, at a recent meeting elected and installed the following officers for the ensuing year: Roy L. Peck, president; Wm. N. Eddy, first vice-president; Murillo Downer, second vice president; Wm. C. Hawthorne, recording secretary; Jas. A. Macauley, corresponding secretary; D. W. Wise, financial secretary; Geo. M. Furness, treasurer; Roy L. Peck and G. A. Gould, representatives to convention.

Captain A. Gallagher, of the Goodrich Transportation Co.'s steamer Indiana, was compelled to abandon his post of duty last Friday, when at Milwaukee he was seized with a severe attack of grip, which incapacitated him, and Captain B. Sniffen was sent for from Manitowoc and brought the steamer to Chicago, arriving here Saturday, when Captain Gallagher was conveyed to his home. Capt. Sniffen has been appointed to the temporary command of the Indiana.

Captain John Jenks was seriously injured Monday afternoon whilst superintending the work on the steamer Madagascar at J. B. Bates & Co.'s shipyard. A piece of heavy timber knocked him down and fell across his abdomen. His life would have been crushed out but for the hatch coaming which helped to retard the blow from the falling piece of timber. The captain was conveyed to his home and surgical aid was summoned. His condition on Tuesday was favorable for his recovery. Much anxiety is felt here by marine men amongst whom Captain Jenks is a great favorite.

A small amount of winter chartering has been done on oats and wheat, but no corn has been placed. It seems, however, that the time is near when there will be corn at Chicago, for the country roads are fast getting into shape where the movement of corn to the small stations is possible. When there is corn in the elevators, it will be time enough to talk seriously about freights for winter storage and spring delivery. The rates will approximate three cents, if, indeed, that rate is not established. Oats and wheat are more abundant at Chicago, and some tonnage is now being placed at two and two and a quarter cents on oats and a proportionate rate on wheat.

DETROIT.

Special Correspondence to the Marine Record.

The annual meeting of the Drydock Association of the Lakes will be held at Hotel Cadillac at Detroit next Tuesday.

Wm. Quinlin, Carlos Leibers and William E. Lennane, owners of the steamer Swallow, filed a libel in the United States Court this morning against the steamer Sir William Siemens, which sank the Swallow in St. Clair river, Oct. 5. The libel alleges incompetency in the Siemens' lookouts and neglect of signals. The aggregate damage to the owners of the Swallow is fixed at $13,580.

The Detroit lodge of the Marine Engineers' Beneficial Association elected the following officers Thursday. Past president, Frank McDonald; president, Frank Seiler; vice-president, J. N. Cretzinger; recording secretary, E. R. Dugan; financial scretary, Frank Kenyon; treasurer, Edward R. Blanchard; trustee, John M. Cronenwith; delegates to convention, Frank McDonald, Albert L. Jones and Thos. Tindall.

The annual meeting of the Lake Carriers' Association, which will be called at the Hotel Cadillac next Wednesday morning, and the meeting of the owners of lumber carrying vessels, that will be held at the Normandie hotel the following day, will attract the attention of a large number of men that are employed on the docks as well as the owners of vessel property. At the meeting of vesselowners who are interested in the lumber trade an effort will be made to agree on a sliding scale for loading and unloading lumber.

Capt. Alexander J. McKay, master of the D. & C. steamer City of Detroit, was again re-elected president of Detroit lodge No. 7, of the Shipmaster' Association. Other officers are: First vice president, Capt. William Roach; second vice president, Capt. J. B. Watts; treasurer, Capt. Hiram Still; secretary, Capt. H. H. Parsons; marshal, Capt. James Beauvais; chaplain, Capt. Charles McIntosh; warden, Capt. William McLean; sentinel, Capt. George C. Burns; trustee for three years, Capt. Alexander J. McKay; trustee for two years, Capt A. J. Fox.

Frank Perry, the well known vessel owner and lumberman, of Sault Ste. Marie, will, about May 1, move with his family to Detroit. Mr. Perry is compelled to make this change on account of his health, which has not been good for the last few years. It will in no way interfere with his business as he expects to spend as much time as his health will permit at the "Soo". Mr. Perry and family have resided many years at the "Soo" and their departure will be greatly regretted by their many friends, who hope that Mr. Perry may be immediately benefitted by the change.

Captain Hogan of the steambarge Albert Soper is probably one of the oldest navigators in point of service on the lakes, having been in harness for the past forty-five years. He is still hale and hearty and good for many more seasons to all appearances. Capt. Hogan has a very retentive memory and can tell of many interesting events of the past when in a reminiscent mood. By the way, it was Capt. Hogan who brought out the Dunbar (which fetched up on Racine reef Monday night) in 1876. While sailing her he picked up the steamer Peerless in a storm one day when she was disabled and at the mercy of the wind and sea with 175 passengers on board. It was a hazardous and difficult undertaking, and his craft was allowed $10,000 salvage for the job.

Rumors are afloat this week that the question of a bridge across the Detroit river is to be revived in Congress within two weeks and that the Michigan Central has its plans all laid for placing the bridge at a point where its approach would be through the township of Ecorse, and a short distance east of the village River Rouge. It is pointed out that the deals of the Michigan Central Railway in Ecorse land within the past year have been with the bridge plan in view and that the Michigan Central or persons interested in the welfare of that road now own land enough for a bridge approach right of way from Fort street to the river with the exception of one piece owned by a man named Marion. This property, it is claimed, was refused the United Alkali Co. because it was being held for the bridge scheme. Henry Russel, attorney for the Michigan Central Railway, says flatly that there is no truth in any such rumor or set of rumors. However, "if a bridge is built across the Detroit river, and I have no doubt that one will ultimately be built, it will be a railroad enterprise, participated in by all the railways which have need for it," declared Mr. Russel. "The location mentioned is not even a good one for the Michigan Central and is practically inaccessible for the other roads crossing the river."

Capt. Enos J. Burke, of the steamer Iroquois, was given a pleasant surprise yesterday afternoon at the meeting of Detroit lodge of the Shipmasters' Association. Capt. Alex. McKay, the president of the association, made a mysterious little speech, in which he referred to the most modest, unassuming member in the room, a man who was a genuine friend to sailors and men who risked their lives on the seas for a living; a man who has endeared himself to a certain set of men, who are favored with few thoughts or sympathy who are often forgotten, yet who are the bravest friends of this distressed mariner, in time of need. "I have something here for such a man," said Capt. McKay. "I don't know what it is, but considering the source from whence it came I know it is worthy the donors and the man who will prize it through the remainder of his life. Capt. Burke, your time has come; stand forward." Capt. Burke received a bulky package and opened it. The package contained a handsome loving cup in silver and gold, resting on an elaborate base of ebony and upon which, inscribed in a gold plate was, "Presented to Capt. Enos J. Burke, by the Surfmen of the United States Life Saving Service." Two years ago Capt. Burke took up the cause of the surfmen and fought a bill through Congress restoring to the surfmen a $5 cut in their monthly pay. He personally secured the assistance of every shipmaster on the lakes and the support of the influential Congressmen necessary to the restoration. The gift was in recognition of that service. The cup was brought here by W. H. Batchellor, of the Jackson Park Life Saving Crew, of Chicago, secretary of the Surfmen's Association.

CLEVELAND.

Special Correspondence to The Marine Record.

Capt. John B. Hall, the well known vessel broker of Buffalo was in the city on Tuesday.

The steel cargo steamer Walter Scranton was successfully launched at the old Globe yard on Saturday morning last.

Mr. A. Osier, Western representative of the well known firm of De Grauw, Aymar & Co., manufacturers of Tyzack's Stockless Anchors, New York City, called on the trade here this week in the interests of his house.

J. C. Joll, the ship carpenter, located at 45 Main street, recently completed considerable repair work on the steamers Pontiac and Frontenac. He is now putting new hatch covers on the steamer Andaste, also new stanchions in her hull.

Cleveland Steamship Co., directors: Capt. John Mitchell, Capt. Alfred Mitchell, A. C. Dustin, Martin Mullen, Loftus Cuddy, Capt. J. H. Barstow, W. H. Gratwick; president and general manager, Capt. John Mitchell; vice president, A. C. Dustin; treasurer, Capt. Alfred Mitchell; secretary, John F. Wedow.

Etna Steamship Co., directors: W. H. Gratwick, John J. McWilliams and H. S. Holden of Buffalo. Capt. John Mitchell, Capt. Alfred Mitchell, John F. Wedow, C. C. Canfield W. A. Canfield, H. S. Hills, W. F. Sauber; president and general manager, Capt. John Mitchell; vice president, W. H. Gratwick; treasurer, Capt. Alfred Mitchell; secretary, John F. Wedow.

A large number of steamship lines will hold their annual meetings this month. The stockholders of three companies met at Mentor this week and re-elected the old directors and officers. They are as follows: Mentor Steamship Co., directors: Capt. John Mitchell, Capt. Alfred Mitchell, C. C. Hale, John F. Wedow, John C. Fitzpatrick; president and general manager, Capt. John Mitchell; vice president, C. C. Hale; treasurer, Capt. Alfred Mitchell; secretary, John F. Wedow.

In the shipment of iron ore it would seem probable that Two Harbors will hold the year's record. Up to December 1st that port had shipped 3,352,236 tons, while Duluth had sent forward 3,570,787 tons, and Escanaba 2,876,298 tons. Ashtabula on the south shore of Lake Erie, which has for several years ranked as the greatest ore-unloading port of the world, has receipts of 3,473,676 tons, and Cleveland presents a total of 3,036,717 tons. At the Carnegie port of Conneaut, Ohio, 2,388,293 tons were received, and at South Chicago, where the ore can be unloaded direct from vessels to furnaces, there were handled 2,022,292 tons.

Capt. Stephen Lyons, harbor master, received the following letter from Chief Engineer James Ritchie: "Beginning Jan. 16 the crews on all the city swing bridges will be reduced in number for the next two months. During said time the river will be declared closed to navigation and none of said bridges will be opened except for the fireboat. You will please notify all vessel owners that any changes they may wish to make as to laying up their boats or for the purpose of getting into any of the drydocks when their turn comes must be made before Jan. 16. This is imperative, as we will not be bothered, as we were last year, by the constant shifting of boats."

The annual meeting of the Tug Firemen's Protective Association was held at No. 94½ Superior street on Tuesday evening. Delegates from Erie, Ashtabula and other Lake Erie ports were present. Most of the members were in favor of re-electing President D. R. McRae, but he declined the honor. The following officers were elected: President, George Price; vice president, William Leimback; treasurer John Byers; financial secretary, James Hobson; recording secretary, William Ryan; corresponding secretary, Everett McAll; trustees, R. K. McRae, trustee, Charles Mermel; sergeant-at-arms, John Gallagher; inside guard, Thomas Hewitt, outside guard, Thomas Dixon.

Mr. Charles H. Keep, secretary of the Lake Carriers' Association, has arranged for a meeting of the executive committee to be held at Detroit January 15, the day previous to the annual meeting of the association, at which a plan will be considered for the establishment of a benefit fund for employes on lake vessels. The letter sent out by Mr. Keep says in part: "The tentative plans now being considered provide for the payment to employes who apply for membership in the fund, of a death benefit in case of death by accident arising out of their employment, and also the payment of a weekly benefit for a limited number of weeks in case of disablement arising out of service. The plan is to have the employe pay a certain fee for membership in the fund when he takes out his benefit book, and in addition a certain sum per month, the balance of the funds necessary to pay the benefits to be contributed to by the vessel owners; the vessels to agree to give preference in employment to holders of benefit books. The plan has been conceived in the light of the experience of railroad companies and other large employers, who have found very beneficial results from the establishment of similar benefit funds. Unfaithfulness in service will forfeit the benefit book and all claim on the fund. It is thought that a plan of this kind will gradually bring into the service on lake vessels a better and more permanent class of employes, and that when an employe has paid in a certain amount of money to the beneficial fund, he will not lightly forfeit his claim on the fund.

There is an active interest in all lake transportation matters. Especially is this true as to the move for the construction of ocean boats at lake yards. Now comes word that Mr. J. C. Gilchrist, who has eight steel steamers of about 5,000 tons capacity each under construction, in different yards of the American Ship Building Co., is evidently gradually trying to gain control of the wooden vessels of the lakes, especially those of 2,000 to 3,500 tons capacity which are needed in the coal trade and in moving ore cargoes of medium size. No wooden vessels are being built to take the place of those lost each year, and the vessels of medium size are most desiriable in the coal trade. This is undoubtedly the reason for Mr. Gilchrist's present move, although it is not probable that he will enter into the undertaking in a way that will cause him to pay fancy prices for the ships. During the past few days he has bought four wooden vessels—the steamers Helena and Neosho, from the Milwaukee Tug Boat Line, the schooner Magnetic from the Republic Iron Co., of Cleveland, and the steamer Volunteer from the estate of Capt. Thomas Wilson. For the Helena and Neosho $125,000 was paid. In addition to the new steel fleet which he is building, Mr. Gilchrist now has twenty-six wooden vessels. He will increase his office force and will employ a shore captain and engineer. Capt. J. L. Weeks, who sailed Gilchrist vessels for a great number of years, has been engaged for the position of shore captain. The shore engineer is Mr. James Mitchell, who has also been in the Gilchrist employ for a long time past.

PORT HURON.

Special Correspondence to The Marine Record.

Capt. W. E. Rice, of Harbor Beach, is spending a few days in the city.

The Huron City is in the Wolverine dry dock receiving a general overhauling.

Capt. A. B. Slyfield bid in the schooner John Minor for $1,025. It is considered a very cheap vessel.

The Jenks Ship Building Co. are rushing the work on the new sea-going boat, and expect to launch her about the middle of February.

The tug Hayes has been furnished with a full set of fire hose by the city fire department and will keep steam on her during the winter as a fire tug.

Frank P. Smith, of the Wolverine Dry Dock, has been awarded the contract for constructing between 10 and 20 government life boats. This dry dock built a large number of boats for the government which were pronounced first-class in every respect. Col. N. J. Kearney, who spent two years in Port Huron superintending the construction of a number of life boats, will superintend the work on the new boats.

At a regular meeting of Huronia M. E. B. A. No. 43, held Wednesday evening, December 26, the following officers were elected for 1901: Past president, George H. Brown; president, Harvey W. Depuy; first vice-president, Chas. Sylvester; second vice-president, Andrew J. Wilson; recording secretary, James A. Southgale; financial secretary, Irvin Buzzard; corresponding secretary, Walter Williams; treasurer, Arthur Armson; conductor, Thomas J. Coyle; Chaplain, George Robin; doorkeepers, A. Turner, Robert Smith; trustees, Geo. H. Bowen, Walter Thorn, A. Armson; delegates to convention, James A. Southgate and Wilbur P. Boynton; alternates to convention, Arthur Armson and A. J. Wilson.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 9TH DIST.,
CHICAGO, ILL., January 4, 1901.

ST. JOSEPH ENTRANCE BUOY, MICHIGAN.

Notice is hereby given that the spar buoy substituted for the third-class can buoy at the entrance to the harbor of St. Joseph, Michigan, has been carried away by the ice and will not be replaced until the opening of navigation in the spring of 1901.

CLOSING OF LIGHTS AND FOG-SIGNALS FOR THE WINTER OF 1900-1901.—Notice is hereby given that the following light and fog-signal stations have been closed for the winter of 1900-1901:

Grand Traverse Light and Fog-Signal; White River Pierhead Light, Lake Michigan, and Muskegon Lake Beacon Muskegon Lake, Michigan.

By order of the Light-House Board.

F. M. SYMONDS, Commander, U. S. Navy,
Inspector 9th L. H. District.

U. S. MERCANTILE MARINE.

Merchant vessels built in the United States and officially numbered by the Bureau of Navigation during the calendar year 1900, comprised 1,102 of 365,791 gross tons, compared with 954 of 267,642 gross tons during 1899. Steel steam vessels numbered 92 of 196,957 gross tons compared with 86 of 126,768 gross tons in 1899. The greater part of this increase is on the Great Lakes, from 14 vessels, 50,836 tons in 1899 to 33 vessels, 108,511 tons in 1900. Steel steam vessels built on the Atlantic coast, 51 of 78,982 gross tons compared with 63 of 73,808 gross tons in 1899.

For comparison Wm. Gray & Co., West Hartlepool, England, built 24 steel steamships of 81,794 tons in 1900.

Steel steam vessels built on the Pacific coast numbered 6 of 8,881 tons, compared with 5 of 553 tons in 1899. Wooden sail vessels increased from 523 of 86,125 tons to 575 of 99,460 tons; wooden steam vessels from 335 to 33,364 tons to 423 of 40,546 tons, steel sail vessels (including schooner barges) from 10 of 21,385 tons to 12 of 28,828 tons. The foregoing figures do not include for either year unrigged canal boats and barges.

QUARTERLY SHIPBUILDING RETURNS

TREASURY DEPARTMENT,
OFFICE OF THE COMMISSIONER OF NAVIGATION,
December 31, 1900.

The Bureau of Navigation reports 260 sail and steam vessels of 90,439 gross tons built in the United States and officially numbered during the quarter ended December 31, 1900, as shown on adjoining columns:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	118	25,296	35	1,757	3	5,532	13	33,987	169	66,572
Pacific	16	7,231	11	1,663	..	.....	1	1,584	28	10,478
Great Lakes	...	.....	6	100	..	.....	8	10,949	14	11,049
Western Rivers	25	418	23	1,360	..	.....	1	562	49	2,340
Total	159	32,945	75	4,880	3	5,532	23	47,082	260	90,439

The largest steel steam vessels included in these figures are: American, 5,591 gross tons, built at Chester, Pa., and owned by American-Hawaii Steamship Co.; Sierra, 5,989 gross tons, built at Philadelphia, Pa., and owned by Oceanic Steamship Co.; Howard L. Shaw, 4,901 gross tons, built at Wyandotte, Mich., and owned by John Shaw Transportation Co.; Sonoma, 6,253 gross tons, built at Philadelphia, Pa., and owned by Oceanic Steamship Co.; Hawaiian, 5,597 gross tons, built at Chester, Pa., and owned by American-Hawaii Steamship Co.; Ventura, 6,253 gross tons, built at Philadelphia, Pa., and owned by Oceanic Steamship Co.; Astral (ship), 3,292 gross tons, built at Bath, Me., and owned by Standard Oil Co.

During the corresponding quarter ended December 31, 1899, 231 sail and steam vessels of 60,257 gross tons were built in the United States and officially numbered, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	135	21,268	26	2,666	4	5,807	16	21,939	181	51,680
Pacific	9	3,535	9	1,520	..	.....	..	.....	18	5,055
Great Lakes	...	.....	3	130	..	.....	1	1,257	4	1,387
Western Rivers	6	133	22	2,002	..	.....	..	.....	28	2,135
Total	150	24,936	60	6,318	4	5,807	17	23,196	231	60,257

MONTHLY SHIPBUILDING RETURNS.

The Bureau of Navigation reports 73 vessels of 29,266 gross tons were built in the United States and officially numbered during the month of December, 1900, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	30	6,423	10	540	1	3,292	4	14,667	45	24,922
Pacific	4	2,547	6	1,033	..	.....	..	.....	10	3,580
Great Lakes	..	.....	1	14	..	.....	1	21	2	35
Western Rivers	7	118	9	611	..	.....	..	.....	16	729
Total	41	9,088	26	2,198	1	3,292	5	14,688	73	29,266

The largest steel steam vessels included in these figures are: Hawaiian, 5,597 gross tons, built at Chester, Pa., and owned by American-Hawaii Steamship Co.; Thomas, 2,525 gross tons, built at Sparrow's Point, Md., and owned by Maryland Steel Co.; Ventura, 6,253 gross tons, built at Philadelphia, Pa., and owned by Oceanic Steamship Co.; Astral (ship), 3,292 gross tons, built at Bath, Me., and owned by Standard Oil Co.

TWELVE MONTHS' SHIPBUILDING RETURNS.

The Bureau of Navigation reports 1,102 sail and steam vessels of 365,791 gross tons built in the United States and officially numbered during calendar year ended December 31, 1900, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	459	74,093	176	12,980	8	11,666	51	78,982	694	177,721
Pacific	56	24,268	83	14,942	..	.....	6	8,881	145	48,091
Great Lakes	6	118	45	4,182	4	17,162	33	108,511	88	129,973
Western Rivers	54	981	119	8,442	..	.....	2	583	175	10,006
Total	575	99,460	423	40,546	12	28,828	92	196,957	1,102	365,791

During the corresponding calendar year ended December 31, 1899, 954 sail and steam vessels of 267,642 gross tons were built in the United States and officially numbered as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	450	69,926	138	9,590	7	10,195	63	73,808	658	163,519
Pacific	38	10,386	71	9,148	..	.....	5	553	114	20,087
Great Lakes	20	5,458	33	4,610	3	11,190	14	50,836	70	72,094
Western Rivers	15	355	93	10,016	..	.....	4	1,571	112	11,942
Total	523	86,125	335	33,364	10	21,385	86	126,768	954	267,642

A NEW COMPASS DIAL.

The Bureau of Equipment of the Navy Department has recently sent to officers of the Navy, and to mariners of repute, a new compass card devised by Lieut. Comdr. S. W. B. Diehl, U. S. N., Superintendent of Compasses. The changes in the compass card proposed by Lieutenant Commander Diehl will, it is claimed, greatly simplify sailing dircctions, and by its adoption all work in connection with the compass will be facilitated. The card now in use contains both degrees and points, but the new card will contain simply the degrees. The conversion of one into the other is, of course, a natural result of the presence of both, but it is claimed that the presence of both is not by any means a necessity. Accuracy requires expression of courses, bearings and compass errors in degrees, and not in points, the use of which, the officer says, is but a duplication of the work. The circumference of the proposed card is divided into the usual 360 degrees marked continuously to the right, from zero at north to 90 degrees at east, 180 at south, 270 at west and 360 degrees at north. It is believed by officers of the navy interested in the new card that the proposed markings would result in far greater accuracy in navigation in its relation to the compass. They say that complaints of error in the application of deviation to compass courses would be lessened, and courses could be laid in degrees and hence more accurately noted, as the approximate course of southwest by west, one-fourth west. Reports on the card are awaited before any official action is taken.

This seems an entirely useless departure; the points are given for the convenience of the helmsman, while the navigators work only by the degrees, and this has been the custom for the past three or four decades.

GERMAN MERCHANT FLAG SALUTE.

Consul Kehl sends from Stettin, November 2, 1900, translation of the rules adopted November 1 by the North German Lloyd, Hamburg-American and other German steamship lines as to flag salute, to be exchanged by their steamers, as follows:

As soon as a German vessel (of the lines named) is sighted the national flag is to be immediately hoisted on the stern flagstaff, regardless of any formalities. Salutes are to be exchanged until the side lights are displayed.

The vessel obliged to make the first solute is:

(a) The ship which overtakes another while under way.

(b) The ship passing a vessel at anchor or otherwise lying still.

(c) The ship from Europe bound "out."

(d) In all other cases, that ship which has the other vessel to her starboard.

The ship which is bound to salute first should dip her flag as soon as the approaching vessel is in the bearing of two points forward from abeam; at all events not later. The flag is to remain dipped until the salute is returned, and then to be hoisted again. After the vessels have passed each other, the ship which was bound to salute first should take in her flag first, unless for special reasons it should remain hoisted.

REBUILDING A STEAMER ON THE TYNE.

Vice-Consul Nixon, sends from Newcastle-on-Tyne, Sept. 6, 1900, copy of printed description of the rebuilding of a steamer on the Tyne, from which the following extracts are taken:

AN ACHIEVEMENT FOR THE TYNE.

To demolish a house and rebuild it is no uncommon accomplishment. But to pull a big steamer to pieces, and reconstruct her upon the same site, so to speak, is quite another thing. But that is just what has been done by the Wallsend Slipway & Engineering Co. with the fine Italian passenger steamer Savoia. They have cut her in two, added 70 feet to her length, stripped her practically from stem to stern, put new decks into her, and, more than all, have remade her after-end to inclose the shafting of her twin screws which formerly were bracketed to the stern frame. They have so transformed the vessel her own parents, the builders, would not know her if they should meet her crossing the sea. The bisecting and lengthening of a steamship is not, of course, new; but in the renovation of the afterpart of the vessel are features that are quite unprecedented in ship repairing.

The Savoia was built in Genoa in 1897 and is owned by the Veloce Co., her voyages being made to and from the River Plata with passengers and mails. She was originally 372 feet long and carried 78 first-class passengers, 40 in the second-class, and 776 in the third-class; and her cargo carrying capacity was only 700 tons. She leaves the slipway 70 feet longer, with accommodation for 130 passengers in the first-class, 74 in the second-class, and 656 in the third class, the increase being chiefly in the superlative accommodation; while her tonnage has been increased to 2,200—more than three times greater than before. The reason for the alteration was that the vessel was unable to meet the increasing demands upon the cargo and passenger accommodation.

The mere lengthening of the vessel by 70 feet is not very extraordinary, but the necessity of strengthening the structure for nearly the whole length at the gunwale decks and bilges has made the task extremely difficult. This extra strengthening consisted of entirely removing the upper strakes of topside plating and replacing them with much heavier material, besides doubling the stringer plates at the level of each of the decks. The bilge of the vessel was stiffened considerably by doubling the bilge plating and efficienttly strengthening the butts of other plating in the vicinity. A new bilge keel was also fitted to the vessel, which will have the effect of making her a much steadier sea boat. From time to time, as the work proceeded, other alterations were added to the original contract, including a larg, deep tank for the purpose of carrying fresh water at the fore end of the vessel and a complete steel lower deck in the midship length for the accommodation of emigrants.

But the alteration of special importance is at the afterend of the vessel. The stern gear, consisting of the propeller and outer tail shaft, were orginally supported in two cast-steel brackets forming part of the stern frame. This system, which is now considered obsolete in modern twin-screw steamers, has been done away with. To accomplish this the cast-steel brackets were cut away from the stern post and two new cast-steel brackets of entirely different design were fitted in their place. From this outer bracket the ship has then been built out by cutting away the vessel and scarphing the various frames from this point to the point where the shafts originally emerged from the vessel, and covering the whole in with suitable plating. The former stern tubes were then removed, and two new stern tubes of considerable length were fitted through this bossed out portion of the ship, to carry the other tail end shafts; the inner stern tubes being now of course, done away with. The tail shafts, which were found to be considerably corroded, were renewed of special Whitworth steel.

The vessel's trials over the actual measured mile were most satisfactory. Her speed came out at 17 knots an hour, her engines making 92 revolutions in the minute, and her indicated horse-power being 7,000 with 180 pounds of steam pressure per square inch in the boilers.

DEEP OCEAN SOUNDING.

In his annual report, speaking of the deep ocean soundings made by the surveying ship "Nero," which investigated the proposed cable line from the United States to the Philippines, Rear Admiral R. B. Bradford says: Last year and this year Lieut.-Com. Hodges, in the Nero, has been sounding along the lines suggested, with the following general results: From Honolulu to the Midway Islands, on the route to the northward on a line of reefs running about west-northwest from the Hawaiian Islands, he finds an almost level plain of soft mud at a general depth of about 2,700 fathoms. Between Midway Islands and Guam is another plain with depths of from 3,100 to 3,200 fathoms, with some submarine reefs and mountain ranges. In last year's report mention was made of an abyss found not far to the eastward of Guam; this Nero Deep, as it is now called, has been further investigated. In November, 1899, Lieut.-Com. Hodges made the two deepest ocean soundings and took the deepest temperatures ever recorded. The depths found were 5,100 and 5,269 fathoms—or nearly six miles, and the temperatures were 35.9 degrees F. at 5,070 fathoms and 30 degrees F. at 5,101 fathoms. He found a practicable cable route, however, to the north of this Deep, though its southern limits are yet unknown, and greater depths may yet be found. Between Guam and the Philippines the bed of the ocean is less regular, but the bottom is soft ooze and favorable for cable-laying. The route from Guam to Yokohama lies to the westward of the Ladrone Islands, and eastward of the Bonin Islands. An almost level plain, with 2,100 fathoms, was found for 500 nautical miles from Guam. At that point a submarine mountain range appears which apparently connects the range extending from the coast of Japan to the Bonin Islands with that of the Ladrone Islands. In crossing this range a submarine peak was found reaching to within eighty-three fathoms of the surface. To the north of this range the ocean bed slopes gradually to the eastward into the great Japanese Deep, that for years held the record for deep water, until the English survey ship Penquin found greater depths in the South-Pacific. The greatest difficulty to be overcome is in finding a suitable crossing of this range between the Ladrones and Bonin; with this done the remainder of the route is excellent for cable-laying.

TRANSPORTING LUMBER.

Owners of lumber carriers from all lake ports will be represented in the meeting of the lumber carriers at Detroit, following the Lake Carriers' meeting, to discuss the question of shifting the burden of the unloading charges upon the shippers. The carriers are all determined upon making some change. Either the rates must be reduced or the shippers must bear the burden, for it has gone past the power of the vessel men to stand it.

The statement which makes the vessel men believe that the charges both for loading and for unloading are all out of proportion is that with carrying charges far below what they were during the season of 1899, the loading charges are ten cents an hour higher, and the unloading advanced about five cents a thousand on all grades of lumber. During the season of 1900 the average rate on lumber approximated $2.50 per thousand, while during the year preceding it was much higher, going up at times to $4.50 and $5, with even better prospects.

At the rate that was being paid during the last season, $2.50 weak, with the higher prices for loading and unloading, the vessels found that they could not make money, and had to lay up. One owner yesterday gave his figures for loading a single cargo to be $800. This was for loading something like 800,000 feet of lumber, the docks not being properly located to assure despatch. Adding to this he paid upward of $200 for having the cargo discharged when she reached the lower lake, and received in compensation for carrying it, about $2,000. Out of this he had to pay for fuel, help, and insurance. The owners see but little better prospects for rates this year, and wish to prevent another season of this kind if possible.

The loading charges at upper lake ports last season were sixty cents an hour. The scale arranged for the south shore ports was as follows: White pine, 1 and 2 inch, No. 3, and better, 30 cents per M; white pine 3 and 4 inch strips, scoots, shorts, and cut-offs, 10 feet and under, 35 cents per M; 4 to 6 inch strips mixed, 32 cents per M; timber, Norway hemlock and pine, 6x6 and up, 45 cents per M; Norway hemlock, 1, 2, 3 inch and 4x4 and 4x6, 35 cents per M; soft elm and bass wood, 35 cent per M; hardwood, 1 and 2 inch, and rock elm, 45 cents per M; hardwood, 3 and 4 inch planks and timbers, and 3 and 4 inch hard pine, 10 cents extra; timber in hold, all kinds, and 3 and 4 inch plank, 10 cents extra.

STEPHEN BONSAL, who has traveled much in the East, narrates in the January Scribner's the story of an adventurous voyage on a plague ship along the China coast, with a shipload of dying coolies.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Admiralty—Interrogatories—Privilege of Parties.—A claim of privilege from answering interrogatories annexed to answers under admiralty rules 31 and 32 in a proceeding by a vessel owner for limitation of liability can only be made on the ground that the answers will expose the petitioner to a criminal prosecution, or to such penalties or forfeitures as may be the subject of a penal or criminal proceeding. That the answers may show that the loss or damage occurred through his "privity or knowledge," and thus deprive him of the right to limitation of liability under Rev. St. § 4283, does not entitle him to refuse to answer, as the loss of such right is not a forfeiture within the meaning of the rules. La Bourgogne, 104 Fed. Rep. (U. S.) 823.

Injunction—Suit by United States.—The additional embankment which caused the obstruction in the river having been built after the passage of act, Sept. 19, 1890 (26 Stat. 454, c 907), which in express terms prohibited "the creation of any obstruction, not affirmatively authorized by law, to the navigable capacity of any waters in respect of which the United States has jurisdiction," and provided that the creation or continuance of any such unlawful obstruction might be prevented by injunction at suit of the United States, the provisions of such act will be enjoined, except on condition that the company takes measures to prevent any further obstruction of the river thereby. Northern Pacific Railway Co. vs. United States, 103 Fed. Rep. (U. S) 691.

Navigable Waters—Obstruction of River.—Where, by reason of a plastic nature of a substratum of clay under the right of way of a railroad located some distance from a navigable river, the track of such road settled, and the additional weight of an embankment built by the company forced the clay into the bed of the river, causing a bar, which obstructed navigation, such bar is the direct result of the building of the embankment and constitutes a public nuisance, for the creation and maintenance of which the company is liable, unless the obstruction was authorized by Congress, and such authority cannot be implied from an act authorizing the building of the road where it was located. Northern Pacific Railway Co. vs. United States, 104 Fed. Rep. (U. S.) 691.

Measure of Damages.—Where, on the refusal of a charterer to accept the vessel, she was at once advertised for charter, and rechartered to same person, for the same voyage, at a lower rate, which voyage she made, the difference between the freights to be paid under the two charters, plus the demurrage fixed by the original charter for the delay in obtaining the second, does not furnish the measure of damages, but the measure is the difference between the freight which would have been received under the first charter and the amount actually received under the second, up to the time when the first would have been completed, the expenses of the two voyages being presumably the same; and, where the one actually made was under ordinary conditions, it furnishes relevant evidence of the time which would have been required under the first charter. Leblond et al. vs. McNear, 104 Fed. Rep. (U. S.) 826.

Refusal to Answer Question—Materiality—Trial.—A marine policy, which provided that the insurer should be liable for not more than half the value of the property at the time of loss, required the insured to submit to an examination under oath, in case of loss, and provided that no suit could be maintained on the policy unless the insured complied with all the requirements thereof. The steamer, which was insured for $2,500, was old, and had been purchased by insured at receiver's sale, and $3,500 was afterwards expended in repairs. On an examination after loss, the insured refused to state the price paid therefor. The insurer introduced no evidence showing that the price paid was material. Held, that such refusal would not prevent a recovery on the policy, since it could be said as a matter of law that the price paid was material to the risk. Porter vs. Traders' Insurance Co. of Chicago, 58 N. E. Rep. (N. Y.) 641.

Shipping—Construction of Charter—Delay for Repairs.—A vessel was chartered for a voyage from San Francisco to a European port with a cargo of wheat, and was to proceed in ballast from Australia, where she then was, to the port of loading. The charter provided that she should be in good condition, and a certificate of charterers' competent surveyor was to be furnished the charterers, which, if not satisfactory to either part, should be followed by special survey or arbitration. Following such provisions was one that, "should the vessel fail to pass satisfactory survey, or, in case of submission to arbitration, should the decision be against the vessel, or should the vessel be detained for more than ten days for repairs, this charter to be void, at charterers' option." Held, that in view of the conditions existing at the time the charter was made, and the long voyage without profit which the vessel was required to make in order to enter upon the charter, the latter clause of such provisions must be construed to relate to a delay for repairs occuring after the vessel had been tendered to the charterers, and found to be necessary by the surveyor or arbitrators, and that a delay of more than ten days for repairs after the vessel reached San Francisco, but before she was tendered to the charterers, did not justify them in rescinding the charter. Leblond et al. vs. McNear, 104 Fed. Rep. (U. S.) 826.

MARINE RECORD

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CLEVELAND, O., JANUARY 10, 1901.

TO WIDEN CHICAGO RIVER.

Demands that no further expense be incurred in connection with the river and canal improvements until a definite plan of action for future work is mapped out, and that the plan be prepared with all possible haste, will be contained in recommendations to be submitted by fifteen of the twenty-eight members of the citizens' executive committee to the general citizens' river improvement commision at its next meeting. The recommendations were drawn up by a committee of three appointed at the conference of members of the improvement commission, who oppose the dilatory measures advocated in the majority report of the sub-committee.

The committee, while it declared itself in favor of widening and deeping the river without loss of time, is firm in its advocacy of a definite policy that shall be pursued without deviation until the great work is completed. The meeting was held in the office of P. B. Weare in the Old Colony building. The committee is composed of Dr. A. R. Reynolds, Judge Orrin N. Carter, and P. B. Weare. It will submit its report to the growing "minority" at another conference.

The report as decided upon by the committee is in line with that submitted by that eminent authority Lyman E. Cooley, C. E., at the last meeting of the executive committee of the citizens' commission. It is recommended that the entire matter of the harbor improvements, widening of the river, construction of bridges, lowering of tunnels, and annexation of territory to the district be submitted to the consideration of an expert committee that shall report on the cost and the best plan of action to pursue.

Mr. Cooley's report states:

"It does not appear that any well-defined policy and scheme of co-operation exists as between the district, the city, and the United States in regard to the Chicago river as a harbor and as a part of a waterway between the lakes and the Mississippi river, and it is apparent that each has certain legal and equitable duties in the matter. There appear to be unsolved complications in regard to works of the State of Illinios."

It is suggested that the expert committee be composed of engineers and lawyers who are familiar with the history and the works for the sanitary relief of Chicago. Also:

"That associates of the committee shall be appointed as follows: By permission of the Secretary of War, the officer in charge of this river and harbor district; by the city of Chicago, the superintendent of public works, the city engineer, and the Corporation Counsel; by the State Board of Health and the health department of the city of Chicago, each a representative; by the sanitary district, the chief engineer and the attorney.

"That said committee shall mature the broad features of a comprehensive plan, with proximate estimates of cost, that shall fully cover the purposes sought in the sanitary district law, define the proper relations of the several agencies that should co-operate, determine the order in which work should be carried on, and mature any acts of legislation that may be expedient."

AIDS TO NAVIGATION.

Capt. George P. McKay, chairman of the Lake Carriers' committee on aids to navigavion, has received a copy of resolutions adopted by the Milwaukee lodge of the Shipmasters' Association, recommending that the rules now in force for navigating the "Soo" river remain as they are for the present and similar rules be applied to parts of the Detroit and St. Clair rivers. The resolutions follow:

"Resolved, that we, the petitioners, deem it necessary, unwise and dangerous to the safe navigation of the "Soo" river, that the present limit of speed should be increased.

"Resolved, that we likewise recommend that rule 2 of "Soo" river rules shall apply at the following points: From Bar Point light to Ballard reef gas buoy; from Belle Isle light-house to Grosse Point lightship, and from Black River shoal buoy (Port Huron) to Lake Huron lightship 61."

Capt. McKay turned the resolutions over to the Cleveland lodge of shipmasters, and a special meeting was held to discuss the matter. The masters of big vessels are not in favor of the proposed changes in the Detroit and St. Clair rivers and it is not likely that they will be recommended by the masters of the largest craft. The committee appointed by the Cleveland lodge to decide on points where nine more gas buoys should be placed in the "Soo" river made the following recommendations in a report to Capt. McKay:

Two buoys of Mission Point, below Point Iroquois.
One more at Round Island shoal.
One off Cedar Point.
One directly opposite Point Au Pins.
Another one at the turning point at the head of Little Mud Lake.
Another one at the Dark Hole.
One on Watson reef.
One at the upper end of the dyke.

PROPOSED NAVAL RESERVE.

Congress is at last likely to perceive the necessity for the formation of some sort of a naval reserve as a standing preparation for the possibilities of the future, and a bill will probably be presented to our legislators looking to the permanent establishment of the real reserve force. The main feature of the bill will be the limitation of the enlisted force to 20,000 the officers not to exceed 600, the highest rank being that of lieutenant. Ex-naval officers and yacht owners, masters of ocean-going steamships, may qualify as lieutenants at $200 per year at a maximum. The enlisted personnel will be compensated at not over $50 per annum, the Government supplying a sleeping outfit and one suit of clothes, Naval Reserve officers are to be upon the annual naval register, and, together with the men of the force are exempt from jury and militia duty. It is proposed that the reserve shall consist of able-bodied citizens engaged in seafaring life who can pass the necessary examination. Officers, petty officers and men who fought during the Spanish war to have the preference of appointment for officers, and officers shall rank next after those of the same grade in the regular Navy.

Drills aggregating thirty days in the year on a naval vessel are provided for, and officers and men who show special apitude shall be received on board a man-of-war for not less than three months nor more than twelve, receiving Navy pay. A special naval reserve flag is provided for vessels complying with certain condition. In other ways the naval reserve force is to be on the same footing as the regular naval force of the country, including liability to duty at the call of the President and the right to pensions, hospital treatment and admission to the Sailors' Home after twenty years' service. Continuous service of fifteen years entitles an officer to discharge.

Breach of Charter—Measure of Damages.—The measure of damages for a total breach of a charter by the charterer, by refusing to accept the vessel, is the difference between the net earnings which the vessel would have made under the charter and the net earnings which she actually made, or should have made, during the time which would have been required, under ordinary conditions, to make the voyage required by the charter. Leblond et al. vs. McNear, 104 Fed. Rep. (U. S.) 826.

CHANGE OF PILOT LAWS.

Shipmasters and pilots at most of the ports on the Great Lakes are uniting with the purpose of bringing concerted action to bear to secure the repeal of a resolution adopted by the board of supervising inspectors of steam vessels, at its annual meeting in January, 1899. This resolution was in the form of an amendment to existing rules, and reads as follows:

"It shall be the duty of all inspectors, before granting an original license or renewing an existing one, to a master or pilot of steam vessels, for any waters, to satisfy themselves by an examination in writing that such officers are thoroughly familiar with the pilot rules upon the waters for which they are licensed.

The shipmasters advance several reasons in support of their attitude as regards the repealing of this rule. Resolutions protesting against the retaining of the rule have already been adopted by the grand lodge of the organization and also by the local lodges at the various lake ports, and delegates have been selected to go to Washington when the board of supervising inspectors holds its annual meeting and argue for the repeal of the rule.

Supervising Inspector-General James Dumont, according to report, has suggested that the rule be modified by substituting oral for written exeminations, or by allowing the rule to stand, but not requiring its enforcement. Neither of these suggestions meets with favorable reception on the part of the shipmasters.

The shipmasters feel that the adoption of the resolution as it stands was due to the influence of certain insurance men, who sought that method of throwing additional safeguards around the property upon which they were carrying risks.

The five year licenses which were issued in 1897 do not expire until 1902, but the Shipmasters' Association, headed by President Alex. J. McKay, of Detroit, wants to secure the repeal of the regulation at the annual meeting of the board of supervising inspectors to be held this month.

The following, taken from the annual report of the board of supervising inspectors of steam vessels for the year ended June 30, 1900, would seem to indicate that the board itself has considerable confidence in the efficiency of officers employed in the merchant marine.

"This office," so reads the report, "would fail in its duty did it not call attention to the large share of credit due the masters, pilots and engineers in charge, for the safety of life on steam vessels. The skill of the officers referred to in handling their vessels cannot be surpassed and hardly equaled by the navigators of any other nation in the world; in fact that has commanded the wonder, admiration and commendation of such capable judges of skill in navigation as our highest and most distinguished naval officers."

In view of this complimentary criticism the shipmasters feel that they should be able to secure the repeal of the objectional rule without great difficulty.

IMPROVING THE WEATHER BUREAU.

A move in the right direction has been made by the U. S. Weather Bureau in an attempt to inaugurate an extension of its service in Sand Key, one of the Tortugas, for the purpose of anticipating the approach of the destructive storms and hurricanes which in so many instances are known to proceed from the part of the Gulf of Mexico included in the range of Sand Key. Comdr. Jas. R. Selfridge, U. S. N., in charge of the eighth light-house district, in which is included Sand Key, has interested himself in the proposition for an observing station at this point, and it is quite possible that the present Congress will authorize the requisite expenditures for its installation. It is understood that the terrible gale which devastated Galveston last fall could have been foretold many hours sooner had a station been in operation on Sand Key, and, although the fatal effects of the tornado on property could not have been avoided, the loss of life would probably have been much less. With every expansion of the weather service the safety of our seafaring population is being steadily improved. Sand Key is the advanced sentinel of the storm center which evolves itself in the great Gulf of Mexico.—Army and Navy Journal.

VESSELS CLASSED.

Vessels classed and rated by the American Bureau of Shipping in the "Record of American and Foreign Shipping."

American screw James S. Whitney; Vetura; schooners Joseph B. Thomas, Lizzie Cochran, William J. Lermond, Edith Symington, George C. Thomas; bark Annie Reed; 3-mast schooner D. D. Haskell, 3-mast schooner Jeannie Lippitt, and barge Havana; British screw Vaderland, schooner Kipling, Frances A. Rice, and 3-mast schooner Greta.

THOUSAND-TON BARGE CANAL.

At the annual meeting of the Rochester Chamber of Commerce, Monday night, G. H. Raymond, of Buffalo, in discussing the 1,000 ton barge canal, in part said:

History is made very fast at this age. Commercial history is made still faster. This needs no suggestion from me before such an audience. That business man who early sees a commercial tendency, and first takes the advantage of it, is the one who is first, last and all the time at the front of the procession. It is the discovery of this tendency on the part of the business interests of the state that has aroused the greatest interest in canal improvement. Reasons the most powerful today for canal improvement did not exist fifteen years ago. They are today irresistible. If the Erie canal was not now in existence the state of New York would be justified in building a canal from Buffalo to Albany solely for the possible advantages that will come to this state in the iron and steel business.

If no other traffic ever moved over it the investment would be a paying one for the state. If the Erie canal is so enlarged that barges of 1,000 tons capacity can be used there would apparently be nothing to prevent the entire section of this state, along the canal and the Hudson river, from Buffalo to New York, becoming the center of the iron and steel industries of this country.

Vast as the iron and steel business in this country is at the present time the natural increase in the demand will require that by 1910 there must be twice as many iron and steel plants in the United States as at present exist. Is it possible to offer inducements that will bring new iron and steel plants within the state of New York? Clearly it is, and it can come only by making the Erie canal able to float barges of 1,000 tons capacity. With such a canal the future prosperity of this state will be assured in the iron and steel traffic and at this time makes possible an enormous growth in all existing lines of traffic now passing through the port of New York. Look at the course of the iron trade today. The ores from Lake Superior are brought to Lake Erie ports by large craft. For the great Carnegie plant the ores are brought to Conneaut. They are there put on cars and moved to Pittsburg at a cost of 98 cents per ton. Take two tons of ore for a ton of pig and we have a first freight charge from Conneaut to Pittsburg of $1.96 per ton. Made into two pigs or rolled into shapes at Pittsburg it is then moved over the mountains at a second freight charge of $2.80 to $3.00 per ton on pig iron, and $4.03 per ton on beams and cast shapes. We then have pig iron made at Pittsburg via Conneaut, costing for freight to tidewater $5 per ton. Made into shapes the manufactured iron costs about $6 per ton for freight, laid at tidewater. Let us now look at the manufacture of iron and steel at any point in the state between Buffalo and New York.

The total tonnage of all the canals for 1900 was 3,345,241 tons and of this amount the through traffic of grain was only 355,908 tons, or about 10 per cent. This explodes the theory that the canal is used for the handling charges at Buffalo.

The New York state canals, in spite of railroad efforts, are doing more and more local traffic and less and less through western traffic. Barely 10 per cent. of the traffic of state canals is made up of competitive products from the west. The interior cities, like Rochester and Syracuse, are doing more and more over the canals. Rochester's business interests are using the canals much more extensively than are the business interests of Buffalo.

THE LARGEST GRAVING DOCK IN THE WORLD.

The new "Canada" graving dock at Liverpool, England recently opened is 925 feet 6 inches long; width at entrance, 94 feet; width of top, 124 feet 2 inches; width of bottom, 94 feet; depth on sill and blocks at high water of ordinary spring tides, 32 feet. The main body of the dock and the entrance are constructed of Portland cement concrete, 8 to 1, finished with concrete 6 to 1. The three centrifugal pumps, each having a suction pipe 51 inches in diameter will, if required, empty the dock when filled to high water level of ordinary spring tides (representing a volume of water of about 3,500,000 cubic feet) in an hour and a half. There is also one small pump 14 inches in diameter for dealing with leakage. The gates are opened and closed by means of hydraulic cylinders with multiplying sheaves and chains. The dock board also has under construction a still larger dry dock of the following dimensions: Length 1,000 feet; width of entrance, 95 feet; depth of sill at high water of ordinary spring tides, 37 feet. Improvements are also under way by which the depth of water over the sill of the "Canada" dry dock can be made anything desired. Among other large dry docks there is the Alexandria graving dock at Belfast, 825 feet; the Herculaneum dock No. 3 at Liverpool, 768 feet; the 750-foot dry dock at Southampton, the dry dock at Dunkirk, France, 662 feet; the dry dock at Genoa, Italy, 720 feet; the dry dock at St. Johns, N. F., 610 feet; the dry dock at the Erie basin, New York, 620 feet; and the dry dock at Talcahuano, Chili, 629 feet.

DEATH OF MR. JOHN GORDON.

The sudden death last Thursday morning of John Gordon in his apartments in the Trubee, No. 414 Delaware avenue, Buffalo, removes one of the best known and most popular men connected with the shipping interests of the Great Lakes. Mr. Gordon's death was entirely unexpected. He had no previous illness and at midnight on Wednesday he retired after a pleasant chat with his wife, apparently in the best of health About 3 o'clock in the morning Mrs. Gordon noticed something peculiar about her husband's breathing and sent for Dr. Hayd. Before the physician arrived Mr. Gordon was dead. Dr. Hayd pronounced the death due to heart failure.

John Gordon was born in Detroit on Aug. 1, 1841. When eighteen years old he entered the employ of the Michigan Central Railroad Co. Two years later he became a clerk in the Detroit postoffice, a position which he held for two years, returning to the Michigan Central, which he again left to take the position of purser on one of the Ward line boats. He rapidly acquired a knowledge of the lake shipping business, and in 1868 went in that business on his own account, buying the steamer Forest Queen and two other boats. In 1873 one of the vessels was burned and the two others lost in the ice, with no insurance on any of them. Mr. Gordon returned to the service of the Ward line as its agent to Duluth. In 1878 he bought two more boats, the Manistee and the Metropolis, which he sold in 1879 and became agent of the Lake Superior Transit Co. at Duluth. From 1880 to 1889 he was the Chicago agent of the Anchor line and then went to Buffalo and organized the Northern Steamship Co. for the Great Northern railroad. He became general manager of that company, and a little later held simultaneously that position and that of general manager for the Lehigh Valley Transportation Co. In 1895 he resigned both positions and organized the Union Transit Co., which he sold in 1896 and organized the Great Lakes Steamship Co. This he disposed of in 1899 and since then had been working on the organization of the proposed Chicago and Buffalo passenger steamer line.

Mr. Gordon is survived by a widow, who was Miss Elizabeth F. Wilgus of Sheboygan, Wis., and by three sons, F. B. Gordon and Robert Gordon of Buffalo, and John P. Gordon of Vancouver, B. C.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	3,269,000	13,000	49,000	73,000	1,320,000
" afloat	1,181,000	.....	162,000	.....	.....
Chicago	11,672,000	2,737,000	2,925,000	623,000	223,000
" afloat	.....	.....	148,000	.....	.....
Detroit	491,000	233,000	.....	47,000	29,000
Duluth	6,471,000	934,000	765,000	265,000	114,000
Fort William, Ont.	1,325,000	.....	.....	.....	.....
Milwaukee	989,000	327,000	462,000	3,000	31,000
Montreal	94,000	15,000	77,000	9,000	43,000
Port Arthur, Ont.	254,000	.....	.....	.....	.....
Toledo	506,000	1,590,000	741,000	10,000	.....
Toronto	92,000	.....	2,000	.....	180,000
On Miss. River	.....	.....	.....	.....	.....
Grand Total	61,245,000	10,429,000	9,632,000	1,266,000	2,483,000
Corresponding Date, 1899	57,892,000	12,613,000	5,251,000	1,311,000	2,210,000
Increase	.....	1,367,000	239,000	4,000	.....
Decrease	163,000	.....	.....	.....	179,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

IT is understood that a party of scientists will sail from Boston early in the year on a voyage around the globe from east to west. The most important end in view will be the total eclipse of the sun, which will be visible in Sumatra in May, 1901. In this connection it is not impossible that the party will interest the Navy Department in the matter with the object of receiving scientific assistance in the observation of this important event. It is not believed the United States will go to any great expense on its own account in the matter, but the assistance to be requested will be in the direction of knowing what to observe more than anything else.

A TRIM PASSENGER BOAT.

A small passenger vessel, but a very trim one and in every way up-to-date, is the steamer Rideau Queen, owned by the Rideau Lakes Navigation Co., Kingston, Ont. The Rideau Queen, alike to other vessels of the fleet to which she belongs was designed and built by Mr. M. R. Davis, of Kingston, who is to build another similar vessel during the coming winter for the same company. The route followed by these vessels between Kingston and Ottawa, Ont., a distance of 126½ miles, is what is known as the Rideau canal. But it is not an ordinary canal. It is a waterway between the two cities mentioned made by connecting a large number of beautiful lakes. The actual canal is comparatively short, while the lakes afford delightful sails and scenery. The canal was constructed by the British government as a military work, at a cost of $5,000,000, as far back as 1830. If, in the time of war, the navigation of the St. Lawrence was interrupted, this canal, in conjunction with the Ottawa river, would furnish direct communication between Montreal and the Great Lakes.

Dimensions of the Rideau Queen are; Length over all, 111½ feet; length on water line, 102 feet; beam over all, twenty-eight feet; draught, aft, 4½ feet; draught, forward, three feet; displacement, about 200 tons. The hull is built of oak and tamarack (double frame) all screw-bolted throughout, with a double row of arches the full length of the steamer under decks. As the limit of draught in the canals is five feet, it was quite a difficult matter to secure in the design all that was required for an up-to-date steamer, but after a season's work the owners are more than satisfied with their vessels.

Engines are triple expansion with cylinders of 8½, 12¾ and 27 inches diameter and a common stroke of fourteen inches. The high and intermediate cylinders have piston valves, with flat slide valve for the low pressure. Steam at 200 pound pressure is supplied by a water tube boiler of eight feet width, nine feet height and nine feet length, containing 1,500 square feet of heating surface. With the engines turning 125 revolutions per minute the speed of the vessel is full twelve miles an hour.

ICE BREAKING IN THE ST. LAWRENCE.

A company, to be known as the St. Lawrence River Navigation Co., Limited, of Canada, has been formed in London, England, to operate all winter a line of ice-breaking steamships between Montreal and Quebec. The capital of the company is £500,000 and powerful ice-breaking steamers probably of the Ermack type, will be put on the route. Prominent English and Canadian capitalists are interested in the scheme. It is understood that the steamships of the new line will leave Quebec and Montreal simultaneously, and meeting in the vicinity of Three Rivers, each would only have half the journey.

As an ice-breaking proposition Mr. John Kennedy, chief harbor engineer, when told of the scheme, said that there was no doubt that the physical difficulies in the case could be easily overcome. It would, necessarily, in his opinion, be a freight carrying proposition, as he thought few people would care to make the river journey in the winter time. The boats, operating on a freight-carrying basis, would have keen competitors in the railway, which are formidable antagonists, even in the summer time. All that was required in the ice-breaking steamers were weight and power. With these important elements emphasized in the construction of the ships, there was no good reason why they should not be successfully operated.

FOR THE CUP DEFENDER.

A large consignment of Tobin bronze plates for the hull of the new cup defender, now building at the Herreshoff's yard, arrived by freight early last week, from Ansonia, Conn. Each plate was crated separately and almost entirely hidden from view. In all there were twenty-six crates, with a total weight of about seven tons. The plates are from twelve to fifteen feet long and three and a half feet wide. Some are three-sixteenths and others are but three-twentieths of an inch in thickness. This consignment brings the total number of crates now at the yard up to seventy-four. Nothing will be done toward setting up the framework of the boat until the bulb angle irons arrive, and they are being looked for anxiously.

Right to Rescind Charter—Delay in Delivery of Vessel.—A total delay of 21 days after the vessel reached San Francisco, before she was tendered to the charterer, was not so unreasonable as to authorize him to rescind the charter, where she was tendered nearly a month before the expiration of the time allowed by the charter for her arrival. Leblond et al. vs. McNear, 104 Fed. Rep. (U. S.) 826.

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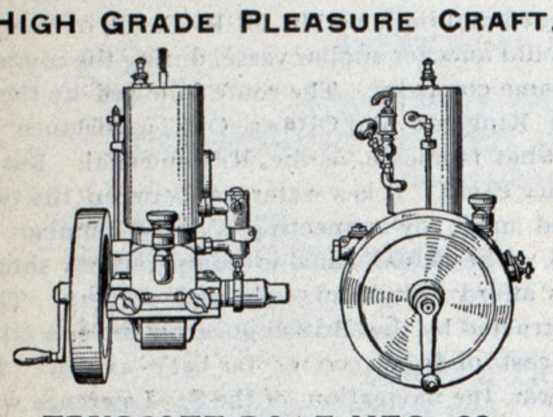

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DEFECTS AND ERRORS OF SUMNER'S METHOD AND OF THE METHOD BY LINES OF POSITION.

The general rottenness of nautical astronomical methods of the last century, and the impotence of officialdom to devise proper substitutes, is strikingly illustrated by Sumner's method, and the method by lines of position. Both methods pretend to be solutions of the problem of finding latitude by double altitudes of the sun, when the time interval between observations is known; and both have the idea in common to find the zenith of the observer by means of the curves which the zenith distances of the observed object describe on the heavenly sphere, which idea, however, both fail to carry into effect.

Sumner's method ascertains two points of each curve for two assumed latitudes and takes the intersection point of the chords obtained by these points for the intersection point of the curves. The method by lines of position ascertains only one point of each curve for an assumed latitude, and the direction of the tangents for each point, and takes the intersection point of the tangents for the intersection point of the curves. From which it is obvious that results by the two methods do never agree, and that the errors in latitude are the greater, the greater the difference between the assumed latitude or latitudes and the true latitude.

The simple fact that chords, respectively tangents, are substituted for the curves, stamps both methods mathematical monstrosities; and their deceitfulness, on this account, should have excluded them from practice. The verification of latitude by these methods, advocated by officialdom, is verification with a vengeance; and many a vessel tells the tale.

The problem which both methods fail to solve may briefly be stated as follows: Given a straight line as basis of a triangle, the other two sides of which are curves of known description, find the distance of the intersection point of these curves from the basis. The base line equals the sum or difference of the computed hour angles for the assumed latitude, minus the elapsed time by observation, and the tangents are given by the azimuths of the object, being at right angles to them. The curves are given by the formula

$$da = \left\{ \frac{\text{tan. h}}{\text{sin. a}} - \frac{\text{tan. b}}{\text{tan. a}} \right\} db \quad \ldots\ldots (1)$$

$$\text{or } da = \frac{\text{cot. t}}{\text{cos. b}}\, db \quad \ldots\ldots (2)$$

which is obtained by the differentiation of the fundamental formula of spherical trigonometry; t denoting the hour angle, b the latitude, a the azimuth from the upper pole, and h the altitude; da equals the change in the tangents for a change of db in latitude, and the angles which chord and tangents form, equal $\frac{da}{2}$, which, for convenience, may be denoted by $\frac{k}{2}$, k being the angle at the center of a circle, that may be substituted for the curve. Denoting the difference between the assumed latitude and the true latitude by db_0, and the difference between the assumed latitude and the latitude obtained by lines of position by db_1; distinguishing quantities pertaining to the first and second altitude by the indices 1 and 2; and assuming both altitudes to be on the same side of the meridian, we have by diagram:

$$\text{Basis} = \left\{ \text{cot. } (a_1 + \tfrac{1}{2} k_1) - \text{cot. } (a_2 + \tfrac{1}{2} k_2) \right\} \frac{d\, b_0}{\text{cos. b}}$$

and also,

$$\text{Basis} = \left\{ \text{cot. } a_1 - \text{cot. } a_2 \right\} \frac{d\, b_1}{\text{cos. b}}$$

from which follows:

$$\frac{d\, b_1}{d\, b_0} = \frac{\text{cot. } (a_1 + \tfrac{1}{2} k_1) - \text{cot. } (a_2 + \tfrac{1}{2} k_2)}{\text{cot. } a_1 - \text{cot. } a_2}$$

$$\frac{db_1 - db_0}{d\, b_0} = \frac{\text{cot. } (a_1 + \tfrac{1}{2} k_1) - \text{cot. } (a_2 + \tfrac{1}{2} k_2) - \text{cot. } a_1 + \text{cot. } a_2}{\text{cot. } a_1 - \text{cot. } a_2}$$

$$= \left\{ \frac{\text{sin. } \tfrac{1}{2} k_2}{\text{sin. } (a_2 + \tfrac{1}{2} k_2) \text{ sin. } a_2} - \frac{\text{sin. } \tfrac{1}{2} k_1}{\text{sin. } (a_1 + \tfrac{1}{2} k_1) \text{ sin. } a_1} \right\} \frac{\text{sin. } a_1 \text{ sin. } a_2}{\text{sin. } (a_2 - a_1)}$$

$$= \frac{\text{sin. } \tfrac{1}{2} k_2 \text{ sin } (a_1 + \tfrac{1}{2} k_1) \text{ sin. } a_1 - \text{sin. } \tfrac{1}{2} k_1 \text{ sin. } (a_2 + \tfrac{1}{2} k_2) \text{ sin. } a_2}{\text{sin. } (a_2 - a_1) \text{ sin. } (a_2 + \tfrac{1}{2} k_2) \text{ sin. } (a_1 + \tfrac{1}{2} k_1)}$$

Carrying out the multiplication and neglecting quantities of a higher order, we obtain:

$$\frac{db_1 - db_0}{db_0} = \frac{\text{sin. } \tfrac{1}{2} k_2 \cdot \tfrac{1}{2} (1 - \text{cos. } 2a_1) - \text{sin. } \tfrac{1}{2} k_1 \cdot \tfrac{1}{2} (1 - \text{cos. } 2a_2)}{\tfrac{1}{2} (1 - \text{cos. } 2a_2) \tfrac{1}{2} \text{ sin. } 2a_1 - \tfrac{1}{2} (1 - \text{cos. } 2a_1) \tfrac{1}{2} \text{ sin. } 2a_2}$$

$$= \frac{\text{sin. } k_2 (1 - \text{cos. } 2a_1) - \text{sin. } k_1 (1 - \text{cos. } 2a_2)}{(1 - \text{cos. } 2a_2) \text{ sin. } 2a_1 - (1 - \text{cos. } 2a_1) \text{ sin. } 2a_2}$$

As $\text{sin. } k = k \text{ sin. } 1'$; and $k = da = \frac{\text{cot. t}}{\text{cos. b}} - d\, b$ we obtain by substitution:

$$\frac{db_1 - db_0}{db_0} = \frac{\text{cot. } t_2 (1 - \text{cos. } 2a_1) - \text{cot. } t_1 (1 - \text{cos. } 2a_2)}{(1 - \text{cos. } 2a_2) \text{ sin. } 2a_1 - (1 - \text{cos } 2a_1) \text{ sin. } 2a_2} \cdot \frac{db_0 \text{ sin. } 1'}{\text{cos. b}}$$

and denoting the error $db_1 - db_0$ by x

$$\text{error } x = \frac{\text{cot. } t_2 (1 - \text{cos. } 2a_1) - \text{cot. } t_1 (1 - \text{cos. } 2a_2)}{(1 - \text{cos. } 2a_2) \text{ sin. } 2a_1 - (1 - \text{cos. } 2a_1) \text{ sin. } 2a_2} \cdot \frac{db_0^2 \text{ sin. } 1'}{\text{cos. b}}$$

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The expression for x reveals the appalling fact that the error by lines of position increaseas as the *square* of the difference between the assumed latitude and the true latitude.

Furthermore, the expression for x tells us, that the error increases as one of the hour angles decreases, becoming infinitely large when the object is near the meridian; a fact, which by itself takes from the method by lines of position the last vestige of value. For, in order to lessen the error, observations have to be removed as far as possible from the meridian, which has the effect that the error in latitude, on account of an error in altitude, is thereby largely increased. The lessening of one error causing the increase of another error.

Conservative and non-productive, officialdom, in spite of all defects, sticks to its pets. It may, therefore, be worth the labor to show the monstrous workings of the method by means of tables; whereby defects not yet touched upon will be developed. To simplify matters, the declination is assumed to be zero.

TABLE I.

Showing the hour angles corresponding to certain azimuths when the declination is zero, the smaller figures at the heading being the azimuths from the lower pole.

LAT.	AZIMUTHS.															
	90° 90°		112½° 67½°		135° 45°		157½° 22½°		165° 15°		170° 10°		175° 5°		179° 1°	
	°	′	°	′	°	′	°	′	°	′	°	′	°	′	°	′
10	90	0	22	45	9	51	4	7	2	40	1	45	0	52	0	10
20	90	0	39	33	18	53	8	4	5	14	3	27	1	43	0	21
30	90	0	50	22	26	34	11	42	7	38	5	2	2	30	0	30
40	90	0	57	12	32	44	14	53	9	46	6	28	3	13	0	39
50	90	0	61	36	37	27	17	36	11	36	7	42	3	50	0	46
60	90	0	64	26	40	54	19	44	13	4	8	41	4	20	0	52
70	90	0	66	13	43	13	21	16	14	8	9	24	4	42	0	56
80	90	0	67	11	44	34	22	12	14	47	9	51	4	55	0	59

TABLE 2.

Showing in minutes the error in latitude by lines of position forming an angle of 45° for different azimuths, for 10° and 80° of latitude, when the declination is zero.

Azimuths of Altitudes.	Difference Between the Assumed and True Latitude. Minutes.					
	10	20	30	40	50	60
179° and 134°	283	1133	2550	4533	7083	10199
175 " 130	11	47	105	187	292	421
170 " 125	3	13	29	51	80	116
165 " 120	1	6	13	24	37	53
157½ " 112½	1	3	6	11	17	24
135 " 90	0	1	2	3	4	6

TABLE 3.

Showing in minutes the error in latitude by lines of position forming an angle of 45° for different azimuths, for 40° and 50° of latitude, when the declination is zero.

Azimuths of Altitudes.	Difference Between the Assumed and True Latitude. Minutes.					
	10	20	30	40	50	60
179° and 134°	98	394	885	1574	2460	3542
175 " 130	4	16	37	65	102	146
170 " 125	1	4	10	18	28	40
165 " 120	0	2	4	7	12	17
157½ " 112½	0	1	2	4	6	9
135 " 90	0	0	1	1	1	2

These tables reveal the fact that the error of results is sometimes greater than the error in the assumed latitude.

From the preceding tables it also appears that the errors in latitude by lines of position are a minimum at about 45 degrees of latitude, and increase toward the poles as well as toward the equator, near the latter being greatest, and finally becoming infinite. It further appears, that to bring errors down to one minute and less, the difference between the assumed and true latitude must not exceed 10 minutes and azimuths be not larger than 165 degrees, a limitation rendering the method, as an independent method, of no use in practice, because the error in the latitude by account, is almost always greater than 10 minutes; errors of from 30 to 60 minutes being of frequent occurrence. An error of 30 minutes in the assumed latitude with one of the altitudes 165 degree in azimuth, and the other at 120 degrees, causes the least error in latitude by lines of position to be four minutes, and an error of 60 minutes causes the error by lines of position to be not less than 17 minutes. From all of which it is evident that the method by lines of position is a fraud and delusion.

Sumner's method partakes of all the defects pertaining to the method by lines of position; both methods being based upon the time difference for different latitudes, as if latitude depended upon time or time differences. The principal obstacle in their way is, that the correct time at any place cannot be found from any single altitude near the meridian, even if the latitude is exactly known. Therefore, altitudes near the meridian are forthwith excluded as unreliable on general principles; which relegates altitudes half way back to the prime vertical, as we have seen before; thereby increasing the error in latitude on account of an error in altitude. Sumner's method, however, has one advantage over the method by lines of position, that it has two chances of hitting the assumed latitude close to the true latitude, while the other has only one chance in a multiplicity of cases.

The error in latitude by Sumner's method is found along the same lines as the error in latitude by lines of position; with this difference, that in the formula for x instead of db_0^2

$$db_0\ (db_0 - db_2)$$

has to be written, db_2 denoting the difference between the two assumed latitudes. From which it appears, that the error by Sumner's method numerically equals the error by lines of position when $db_2 = 2\ db_0$, that is, when the assumed latitudes are at equal distances from the true latitude. In all cases where db_2 is greater than $2\ db_0$ the error by Sumner's method is greater than the error by lines of position, and in all cases where db_2 is less than $2\ db_0$ the error is less; and only when $db_2 = db_0$ the error is zero, that is, when one of the assumed latitudes equals the true latitude.

From the preceding it is evident that both methods are based upon the chance of hitting the true latitude by guess, for which the probablity is one-sixtieth when the error in the latitude by account is 1 degree, a not uncommon occurence in practice, and upon such slender chance depends the correctness of the result by reckoning, and consequently the safety of the vessel.

To make both methods yield correct results in all cases, it is necessary to assume latitudes differing from the true latitude not more than one minute (see first three lines of table values in tables 2 and 3) which necessity renders them of no value in practice.

Sumner's method, and the method by lines of position are relics of the past, by which the impotence of the last century to improve nautical-astronomical methods, and the general rottenness of these methods are most strikingly illustrated.

JOHN MAURICE,
Civil Engineer and Nautical Expert.

Chicago, December, 1900.

On the Great Lakes there are now 424 steam vessels having a tonnage (gross register) of 1,000 tons or more. The aggregate tonnage of these vessels is 911,533, so that the average is 2,150 tons. In all other parts of the United States combined the number of such vessels (1,000 tons and over) is 354, the aggregate tonnage 798,603, and the average 2,256. It will, therefore, be seen that there are more steam vessels of large capacity on the lakes than are to be found in any other parts of the country. These figures are from the annual report of the United States Commissioner of Navigation, issued a few days ago, and which deals with the shipping of the United States on June 30, 1900. The tons are in all cases gross register tons. The report shows that the fleet of steel vessels on the Great Lakes is fast assuming large proportions. There are 763 steam vessels (steam and sail) owned on the Atlantic coast, as against 322 on the Great Lakes, but the aggregate tonnage of the coast vessels is only 762,821, against 687,769 on the Great Lakes. The average tonnage of the lake steel ship, therefore, is 2,136, against only 999 for the Atlantic coast steel ship. On the Pacific coast there are only 84 steel vessels of 125,382 tons, and on the Western rivers only 51, of 11,401 tons.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the condition of the eastern freight market as follows:

The new century does not open very encouragingly from an owner's point of view. During the last week freights generally have shown a downward tendency caused principally by the large amount of unfixed tonnage coming upon the market, and which has been accentuated to a certain extent by a number of steamers (previously chartered at high rates) having missed their canceling dates, and which are obliged to seek fresh employment. The volume of business has been limited owing to the recent holidays, and future transactions we fear will only be effected by concessions on the part of owners. Present rates for grain may be quoted at 3s. 6d. C. f. o. for handy sized vessels and 2s. 10½d. to 3s. to picked ports for large boats. Time charter business is restricted as intending charterers find little difficulty in securing tonnage for single trips. Timber freights, sympathy with the general market, have also declined 2s. 6d. to 5s. per standard and shippers do not show any anxiety to charter ahead even at reduced figures.

The condition of our market for sail tonnage has undergone no appreciable change. The volume of business accomplished in this line during the past week has been remarkably small, partly on account of the scarcity of suitable vessels, but rates rule firm with the probability of remaining so in the near future.

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Patents issued January 1, 1901. Reported especially for the MARINE RECORD. We furnish complete copies of patents at the rate of 10 cents each.

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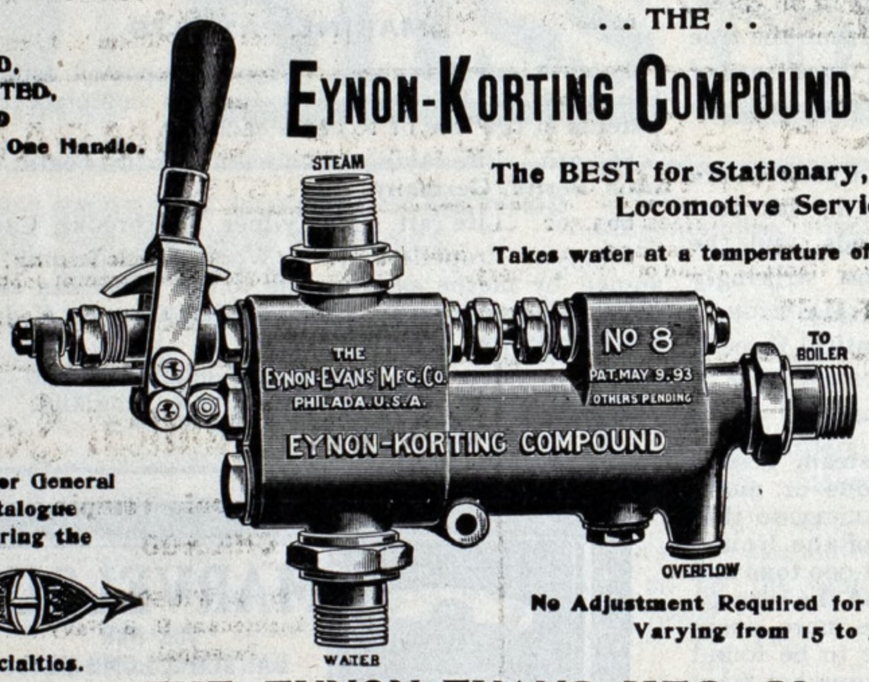

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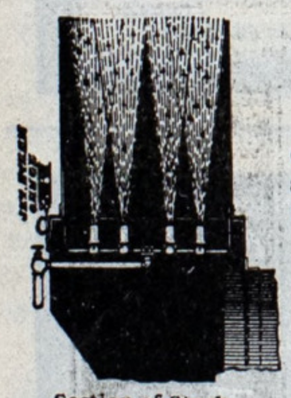

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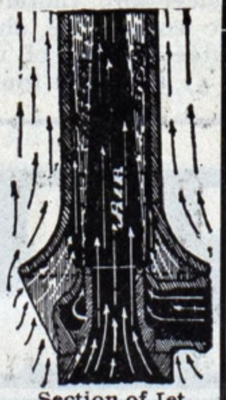

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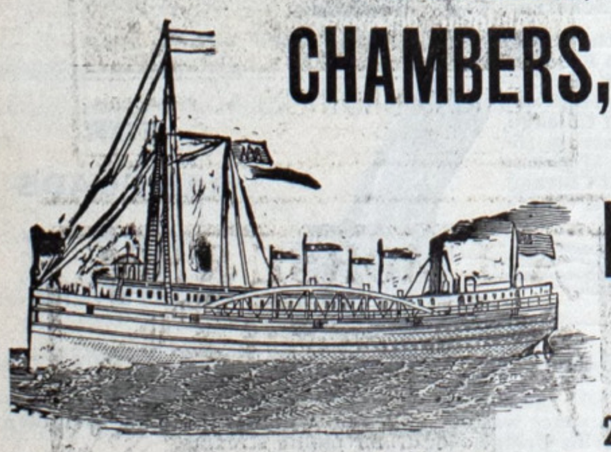

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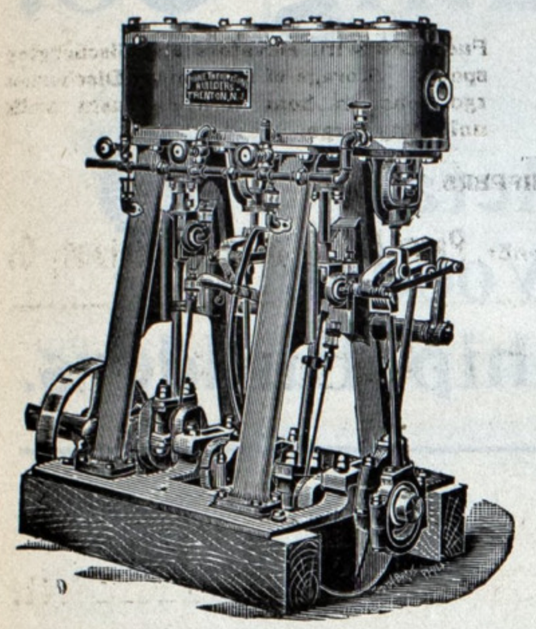

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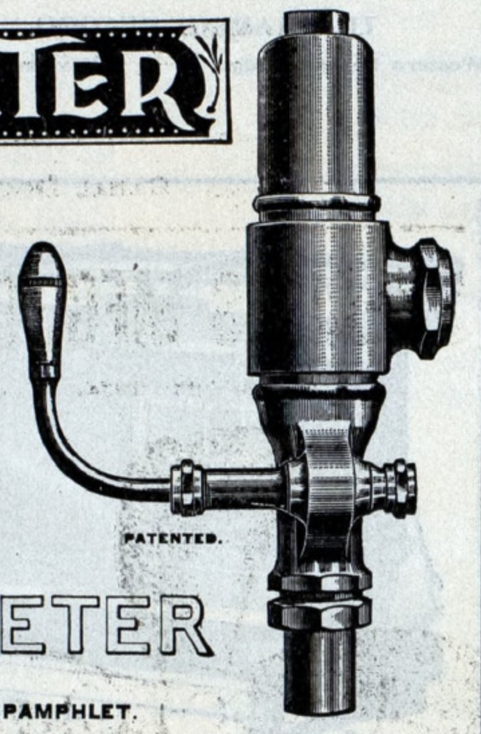

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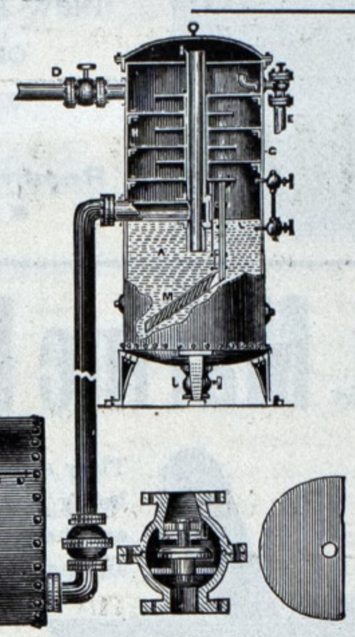

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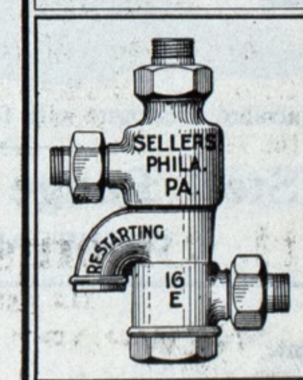

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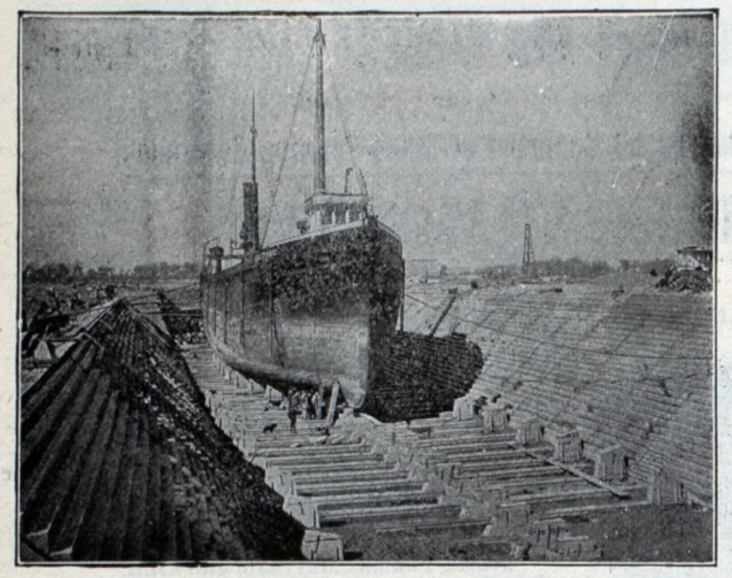

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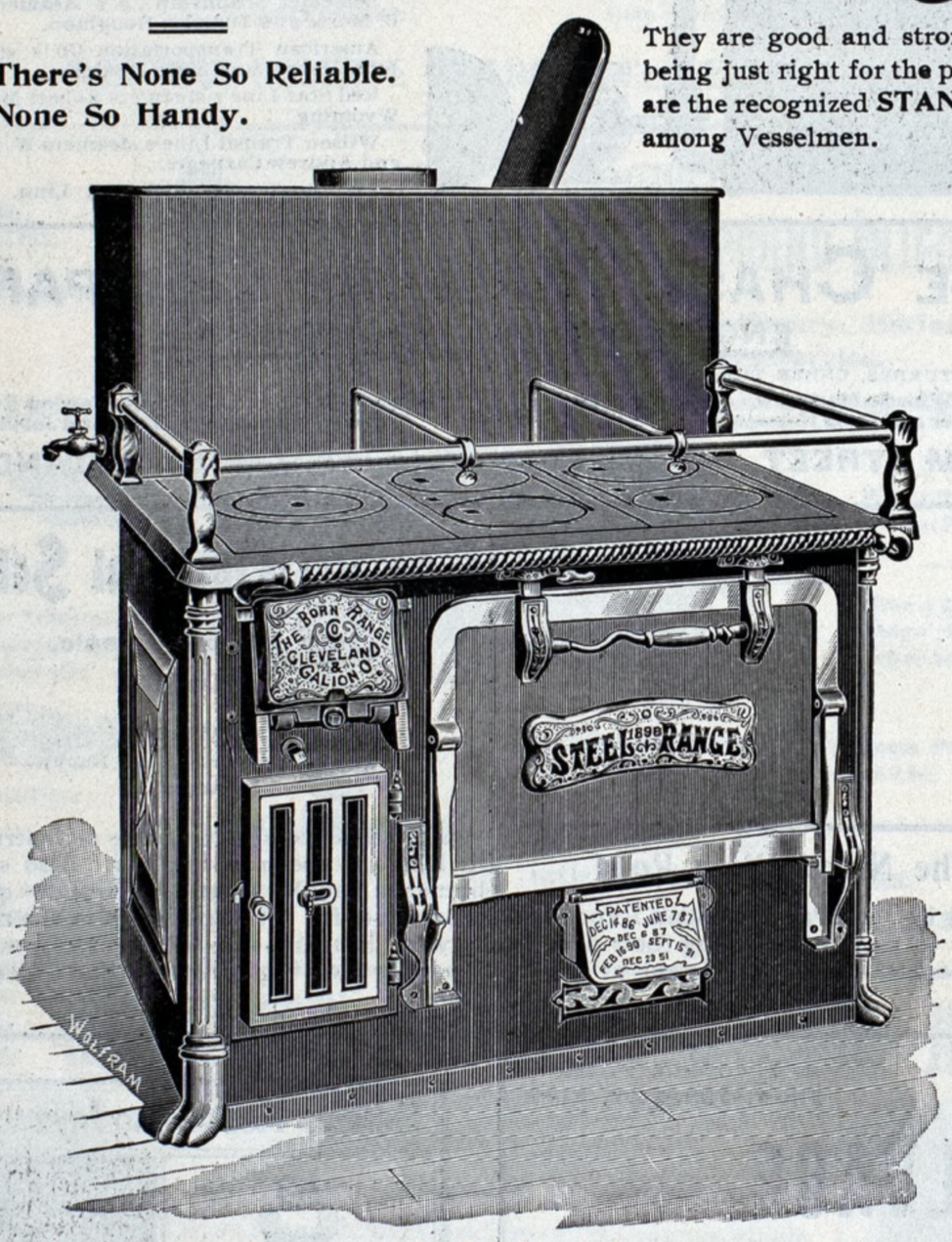

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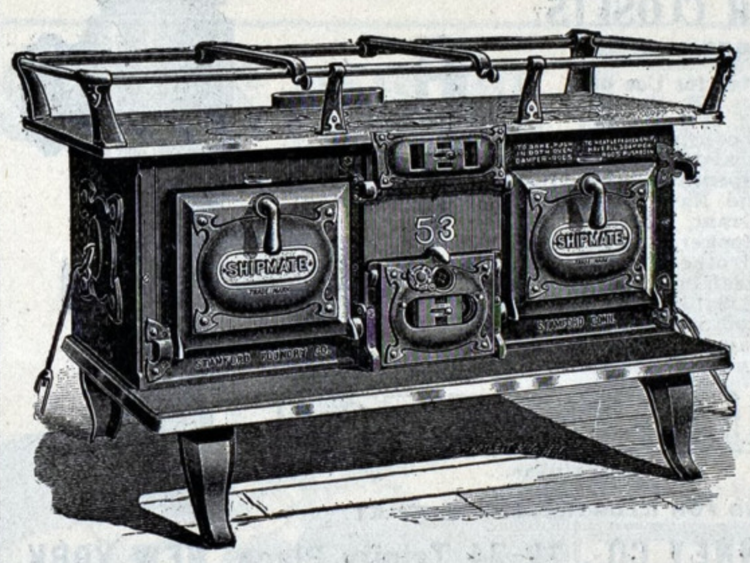

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